THE IRON AGE

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Rolling Mill with Steam Turbine Drive

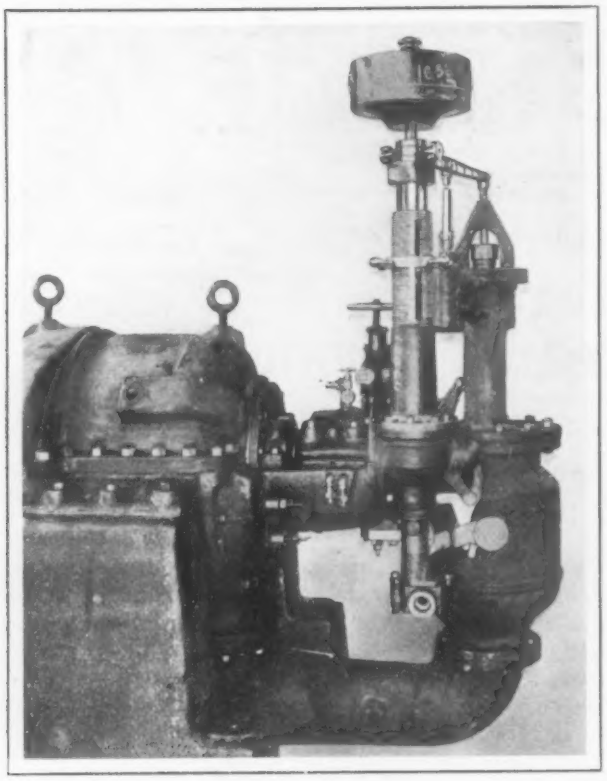
Plant of the Carpenter Steel Company First of the Type in America—Economical Operation Secured by Changing Type of Prime Mover

The first plant in this country and, it is believed, the second in the world to apply the steam turbine to the driving of rolling mills through the medium of mechanical speed-reducing gears is that of the Carpenter Steel Company, Reading, Pa. The first rolling mill to adopt this type of drive was the works of James Dunlop & Co., Calderbank, Scotland. An illustrated description of how a three-high plate mill with rolls 28 in. in diameter and 84 in. long is driven appeared in *The Iron Age*, May 16, 1912.

The First Rolling Mill in America To Be Driven by a Steam Turbine Through Double Speed-Reducing Gears. The Engine Formerly Driving the Mill Is Shown at the Right, the Crankshaft Having Been Disconnected and the Crank Disk Utilized as a Portion of the Flexible Coupling Between the Turbine and the Mill Shaft. The Flywheel in the Central Background Is Part of the Cross-Compound Engine Driving the Finishing Rolls Through a Belt Connection and Supplying Exhaust Steam to the Turbine

A general line of merchant steel, including high grade tool, projectile and special steels for such uses as safety razor blades, springs, etc., is manufactured by the Carpenter Company. A three-high roughing mill, now driven by the turbine, was formerly driven by a 36 x 36 in. simple slide-valve engine that was operated condensing, while the 8 in. and the two 10 in. finishing mills were driven by belt from a cross-compound engine, having a 22-in. high-pressure cylinder, a 40-in. low-pressure cylinder and a 48-in. stroke exhausting into a jet condenser producing only a moderate vacuum. In addition to the main power units for this mill, several service and boiler-feed pumps and air compressors in the immediate vicinity had a portion of their exhaust utilized in an open feed-water heater, while the surplus escaped to the atmosphere. Although the data regarding the exact steam consumption when using this equipment are lacking, it was necessary to operate five boilers with a nominal rating of 1000 hp. continuously.

With a view to reducing power costs several alternatives were considered. The simple engine driving the roughing mill could have been replaced by a modern compound engine and a high-vacuum central condensing plant for the two engines installed, but on account of the fluctuations of the load on the engines and the small average horsepower required, as well as the initial cost and the moderate economy secured, this scheme was not adopted. The next arrangement called for the in-

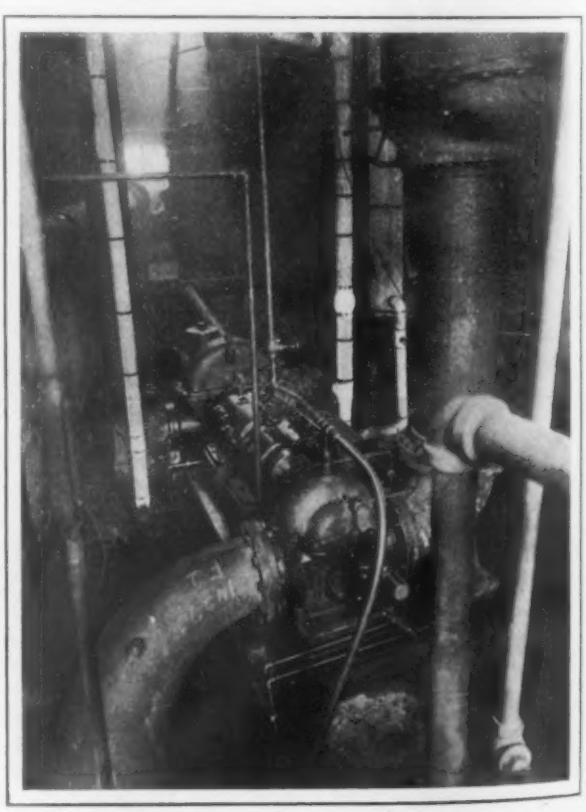


A Special Adjustable-Speed Oil Relay Governor Controls Both the High and Low Pressure Steam Inlets and an Emergency Governor Through the Trip Mechanism Controls Stop Valves and Vacuum Breaker

stallation of a low-pressure turbo-generator operating on the exhaust of the compound engine to supply current to a motor driving the roughing mill. This, however, did not appear attractive, as it involved a large investment in turbine, generator, switchboard, transmission lines, motors, starters, etc., and nearly all the current generated would have been consumed by the roughing mill. The over-all economy of this arrangement was not especially good on account of numerous electrical losses, and the apparatus was complicated. The last solution considered, and the one ultimately adopted, was the installation of a low-pressure turbine to drive the roughing mill. This arrangement involved the use of speed-reducing gears, which although new in the United States, as has been previously mentioned, has been used satisfactorily in Scotland at the Calderbank plant, where a 750-hp. mixed-pressure turbine operates at a speed of 2000 r.p.m., and a reduction in two stages to 375 r.p.m. and finally to 70 r.p.m. is secured by double helical gears of the rigid frame type. As compared with a loss of 15 to 20 per cent. in the electric method of driving, the maximum amount of energy wasted by the gear is stated to be not over 1½ to 2 per cent., and in addition it is cheaper, occupies less space, and as it is simpler requires less attention. The problem of replacing the reciprocating engine by turbine and reduction gears was first taken up by E. J. Poole, superintendent of the plant, in March, 1913. The design and work of installation was done by the Dravo-Doyle Company, Pittsburgh, the turbines, gears and circulating pumps being supplied by the DeLaval Steam Turbine Company, Trenton, N. J.

For the operation of the roughing rolls at the Carpenter plant, an average of about 350 hp. was required, the roll speed varying from 60 to 100 r.p.m. Considerations of efficiency and simplicity of construction required a turbine of this capacity to run at approximately 5000 r.p.m., and to secure the desired reduction of 50 to 1, a two-reduction gear was adopted, the gear and turbine being mounted on one base plate, and the complete unit located so that the shaft of the slow-speed gear was in line with the shaft of the engine which the turbine replaced. The flywheel of the engine, which was 26 ft. in diameter and weighed 47,600 lb., was left in place, together with the engine shaft and the bearings. To avoid any interruption in the work of the plant while making the change and also to guard against a possibility of interruption of service in the future, the engine was left intact, and only the connecting rod removed, a distance piece, which also serves as one of the flanges of the flexible coupling of the low-speed gear shaft, being bolted to the crank disk. After the turbine was installed it was thus possible to operate it without load to test the entire installation. During this time the engine continued to drive the mill and practically no time was lost in changing from the engine to the turbine drive.

The turbine is of the mixed flow type, having separate wheels for the utilization of the high-pressure steam, and is designed to operate on the exhaust of the compound engine alone, with high pressure-steam only or with both. When receiving engine exhaust at a pressure of 3 lb. and exhausting into a 27-in. vacuum, the turbine is to develop 350 hp., at speeds corresponding to 70 to 100 r.p.m. of the mill shaft, and it is guaranteed under these conditions to take not more than 26 lb. of steam per b.h.p.-hr., as measured at the end of the second gear reduction. The normal load of 350 hp. is also to be carried when steam at 120-lb. gauge pressure is used, and the exhaust is into a vacuum of 27 in. The steam consumption under these conditions is guaranteed not to be more than 17½ lb. When operating condensing on both high and low pressure steam, the turbine will carry a load of 600 b.h.p. continuously, and when the compound engine is not running and high-pressure steam only is supplied, the turbine must carry a 600-hp. load, with a



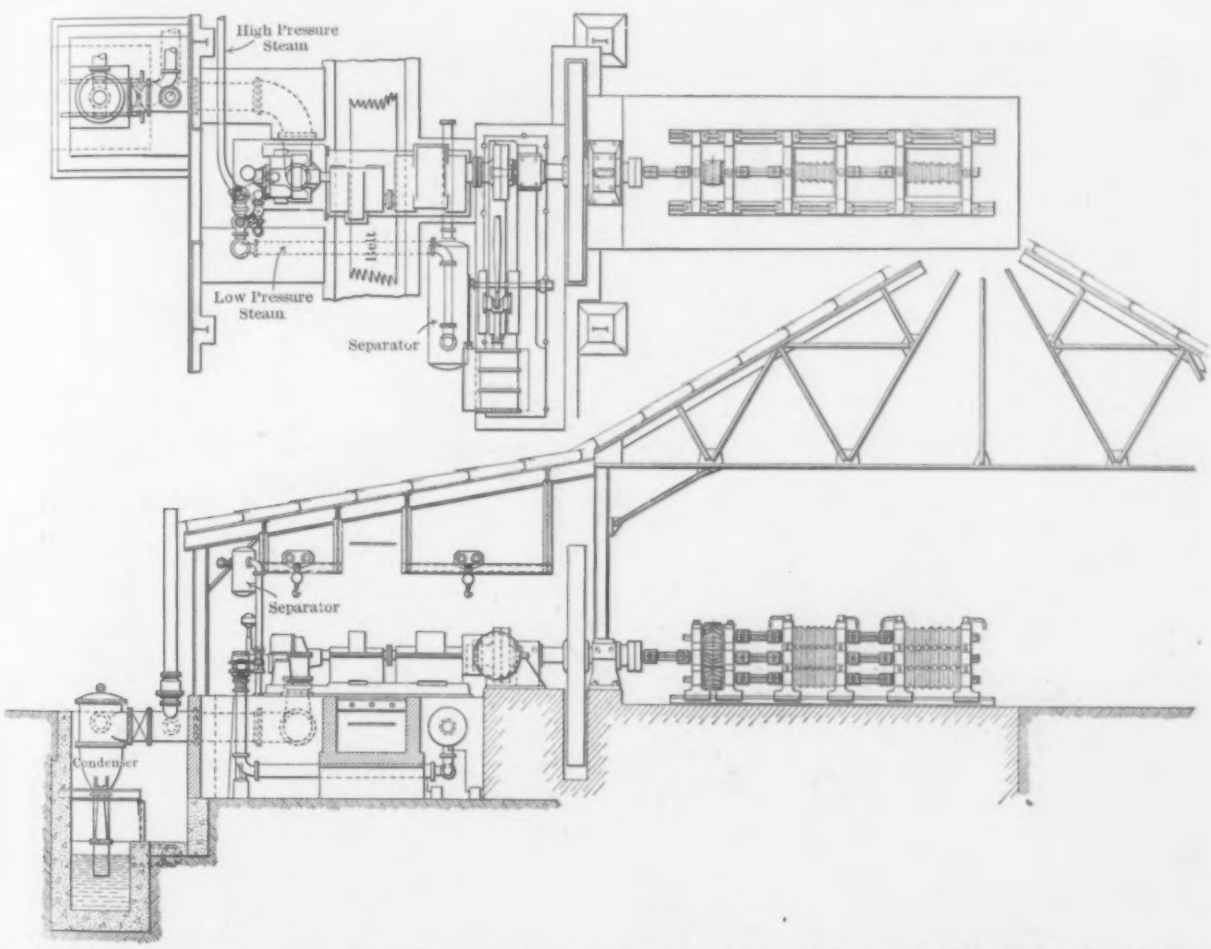
The Centrifugal Pump Driven by a Mixed-Flow Turbine Supplies Circulating Water from the Schuylkill River to the Ejector Condenser. This Pump Has a Capacity of 2200 Gal. per Min. Against a Head of 65 Ft.

consumption of not more than 15.7 lb. of steam per b.h.p. per hr. The normal load of 350 hp. must also be carried when the turbine operates non-condensing with high-pressure steam, thus enabling the condensor or circulating pump to be inspected or repaired without interfering with the operation of the mill. Another requirement made of the turbine was that it should be able to start the mill without difficulty when cold.

The turbine governor, which is of the Jahns type, is of special construction, and by turning the handwheel which encircles the governor spindle, the tension of the spring opposing the governor weights can be varied to give a speed adjustment of 60 to 100 r.p.m. at the rolls. Both the high and low pressure throttle valves are controlled by this governor through an oil relay. The emergency governor, which is located at the end of the turbine shaft, trips the latch in case of over-speeding. This closes the emergency stop valve in both the high and low pressure inlets and opens a vacuum breaker attached to the side of the turbine case.

The gears are of the builder's double-helical type, which was illustrated in *The Iron Age*, April 13, 1911. There are two reductions, the slow-speed shaft running at 60 to 100 r.p.m., the intermediate shaft six times as fast, and the turbine shaft 50 times as fast, or at 5000 r.p.m. when the rolls are running at 100 r.p.m. The gear teeth, which are of the involute type with a 45-deg. angle, are cut in rolled steel bands shrunk on cast-iron centers in the case of the gears, while the pinions are chrome nickel steel forgings. All the high-speed bearings of the turbine and the gears are supplied with oil from a tank placed 15 ft. above the center line of the turbine. The oil is pumped into this elevated tank from a drain tank at the end of the turbine by a gear type oil pump operated by the extended governor spindle. The slow-speed bearings have ring oilers.

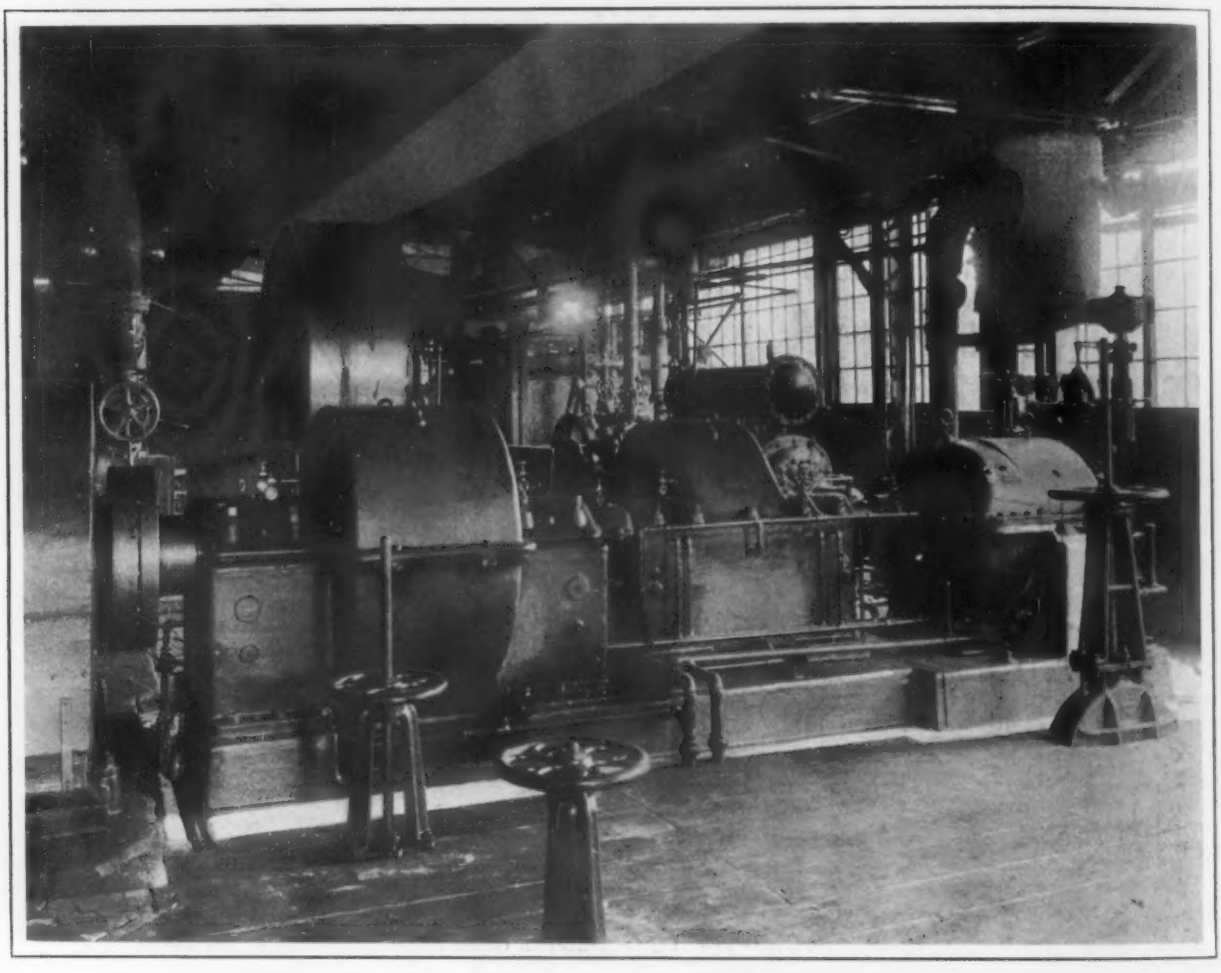
The roughing mill is of the three-high type and consists of two stands of 18-in. rolls. It is manually operated, two men being employed in each stand. As the finishing mill cannot take high carbon steel as fast as the roughing mill can supply it, only one billet is ordinarily in the roughing mill at one time, although when low carbon steel is being rolled two billets are roughed simultaneously. When one billet is being handled, no speed variation is said to be perceptible on the tachometer, which is permanently attached to the intermediate shaft of the reduction gear, and when two billets are being handled the speed drops approximately 2 per cent. This absence of drop in the speed with one billet in the mill shows that the heavy flywheel is not required for power storage under such conditions, and by setting the governor for a greater drop in speed before the high-pressure valve opens, the power storage capacity of the flywheel can be utilized to any extent desired and unnecessary use of high-pressure steam avoided.



Plan View and Elevation of the Steam Turbine and Double Reduction Gears Installed for Driving the Roughing Mill

The arrangement of the steam and water piping connecting the engine, turbine, condenser, etc., can be seen in the drawing. The exhaust pipe on the compound engine is fitted with a cross, one branch leading to a multi-port back-pressure valve, while another runs to the condenser which serves the low-pressure turbine. The turbine receives its low-pressure steam supply through a branch from the latter line. The third branch from the cross runs to the turbine driving the circulating pump located in the boiler room. The compound engine, when operating non-condensing, ordinarily supplies steam under a back pressure of 3 to 3½ lb. to the turbine.

The roughing mill, however, is not required at certain times when the steel is taken directly to the finishing mill. At these times the valves between the engine exhaust and the turbine and between the turbine exhaust and the condenser can be closed, and the valve between the engine exhaust and the condenser opened, thus permitting the engine to be operated condensing. In the low-pressure supply line to the turbine a special receiver steam separator is located. To insure dry steam, a coil of 1-in. copper pipe is inserted in the 10-in. pipe line between the separator and the turbine and is kept filled with live steam and drained by a steam trap. A multi-port flow valve located adjacent to the low-pressure throttle valve of the turbine is designed to prevent the vacuum from backing up from the condenser through the turbine into the engine exhaust line.



The High-Pressure Steam Supply for the Turbine Enters the Steam Separator Shown at the Right Through a Horizontal Pipe and Passes Down to the Turbine Through the Pipe at the Left of the Separator. The Steam Pipe at the Left of the Engraving Is the Supply to the Displaced Engine

Without this valve the possibility exists of air being drawn in through leaks in the exhaust line and through the piston rod and valve stem packings of the engine at times when there is little or no exhaust steam available, this air being likely to interfere with the operation of the condenser.

The condenser, which is of the Schutte-Koerting multi-jet type, is located just outside of the engine room and is protected by a multi-port atmospheric relief valve. With a water temperature of 72 deg. F., the condenser maintains a vacuum of 28.2 in., with the barometer at 29.78 in. This type of condenser was decided upon instead of one requiring air pumps on account of the surplus of exhaust steam available for operating the circulating pump. The circulating water for the condenser is supplied by a centrifugal pump driven by a mixed-flow geared turbine of the velocity-stage type. This turbine has two sets of nozzles and is designed to operate either with steam at 120-lb. gauge pressure, or with exhaust steam at a pressure of 3 lb., exhausting to a 27-in. vacuum, through a 10-in. pipe to the same condenser that serves the main unit. If desired, the pump can be started non-condensing and will carry the full load with high-pressure steam alone, thus providing both for starting the pump before the condenser is in operation, and also for carrying its full load without taking low-pressure steam. The pump is designed to supply 2200 gal. per min. from the Schuylkill River against a 65-ft. head and is fitted with an extended base, upon which an additional pump will be mounted later for other purposes. The speed reducing gears permit both the turbine and the pump to run at the speeds best suited for economical operation, 5000 r.p.m. for the turbine and 1500 r.p.m. for the pump. The surplus exhaust steam not used by either turbine passes to the open feed-water heater, which also receives the exhaust from pumps, air compressors and other auxiliary apparatus located in various portions of the plant.

The cost of the installation, consisting of the turbine, reduction gear, condenser, piping, circulating pump, valves, etc., was approximately $25,000, including the cost of erection. By reason of the better economy secured through its use, it has been possible to reduce the boilers in operation from 1000 hp. to approximately 600 hp., thus securing a saving of approximately $15,000 per annum.

German Steel Works Union on Trade Conditions

Without giving figures as to shipments, as was always done in the reports published before the war, the last statement of the German Steel Works Union given out after its meeting in Düsseldorf, October 20, indicates in a general way the condition of the steel trade in Germany. It is as follows:

Export to neutral countries being made possible again and our customers being again able to ship to these countries, the domestic demand for semi-finished products has improved slightly. Business with England and Belgium has naturally ceased with the war. Some small transactions have been carried on with neutral countries.

In heavy building materials the Baden, Bavarian and Saxon state railroads have placed their orders for 1915, which are less than those for last year. Saxony, however, may place additional orders. Export business in heavy materials remains quiet and up to the present no important contracts have been placed. In mine rails business has improved slightly. Payments are fairly regular and some orders from neutral markets have appeared. There have been further domestic orders for rails, but foreign business has been insignificant.

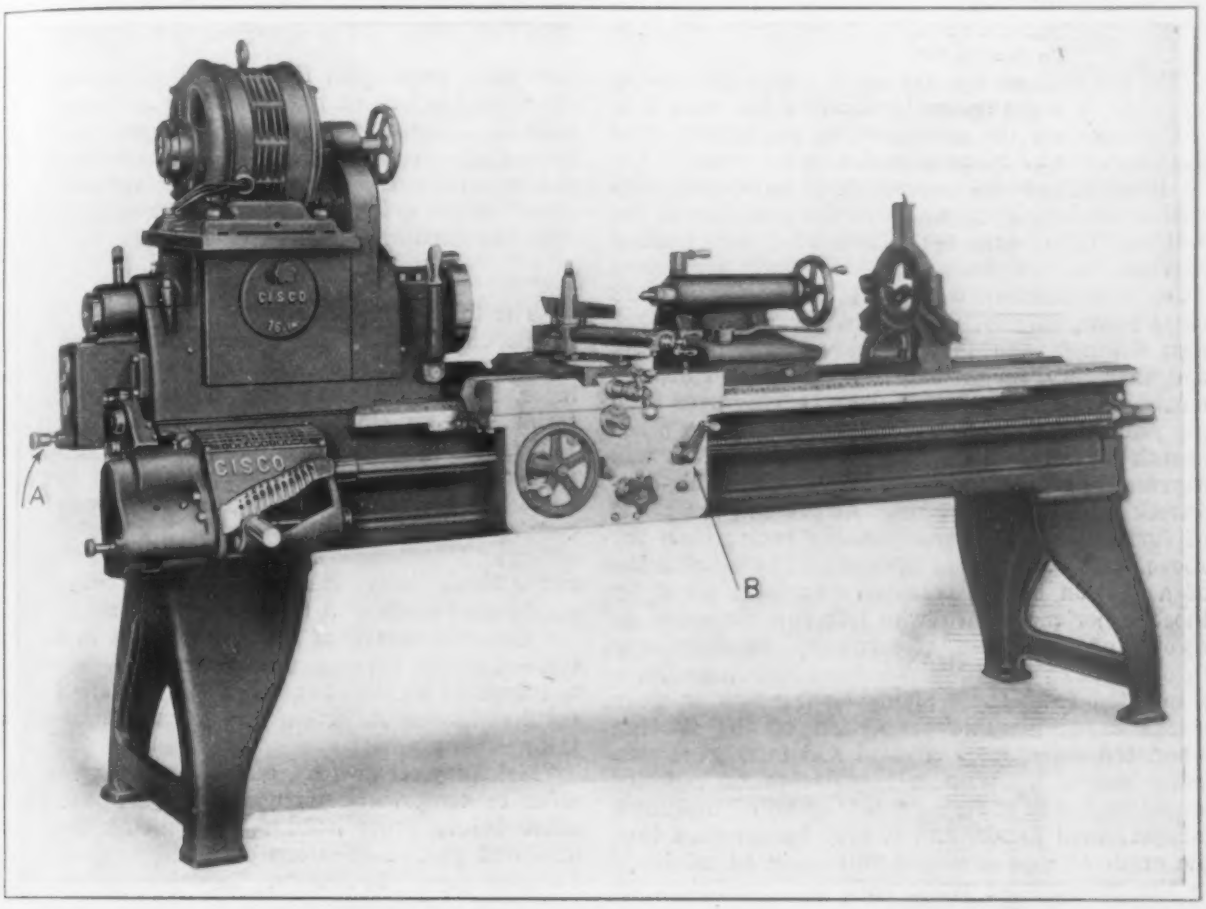
In shapes, specifications and domestic orders have improved since the last meeting. It is expected that deliveries will increase now that freight traffic for the southwestern works has been resumed. In structural material little is to be expected with the approach of winter, which according to experience causes a recession in this line. Sales for the remainder of the year are at unchanged prices.

Export trade has been confined to neutral countries. As soon as the restriction on export business was removed there ensued increased specifications in order to replenish stocks. Here also, however, the influence of winter has been felt in retarding development.

The Electric Steel Company of Indiana, organized at Indianapolis some months ago, has contracted for the installation of a Heroult electric furnace.

An Improved 16-In. Motor-Driven Lathe

A new arrangement of motor drive has been developed by the Cincinnati Iron & Steel Company, Cincinnati, Ohio, for its line of lathes. With this new drive the motor is mounted on top of the headstock and is either a direct or alternating current unit, operating at a constant speed or having a variation. Other improvements made in the lathe include the use of semi-steel for the beds which have been made heavier and deeper, as well as the use of a pull pin to secure high speed and a new form of half nut lock.



A 16-In. Lathe Equipped with Motor Drive and an Improved Speed Changing Device.

The lathe illustrated has a swing of 16 in. with an 8-ft. bed and the improvements mentioned have been applied to the 14 in. x 8 ft. and 18 in. x 10 ft. tools also. The motor used is either 2½ or 3 hp., the one illustrated being a constant-speed 3-hp. Westinghouse motor, operating at 1100 r.p.m. With this arrangement three speeds are available, two obtained by a lever in the front, controlling a friction on the inside and one, designated as an open speed, secured through the face gear. To procure this last speed it is necessary to have the lever on the front of the headstock in the neutral position.

The new arrangement that has been made in the change gear box consists of guides for the tumbler which is relied upon to enable the operator to get the various ranges and changes of the speed without difficulty. The other improvements include the use of a pull pin at the point A which when in the neutral position enables the lathe to run at high speed with all the gears from the first compound thrown out. This arrangement, it is pointed out, is especially desirable for filing and work of a similar nature. At the point B the lock on the half nut is arranged to prevent the lead screw from being clamped too tightly. Another improvement made in the construction of the lathe is the use of higher nuts on the tailstock.

Safety Regulations for Blast Furnaces*

Problems Due to Lack of Intelligence in Workmen—Metallurgical Hazards and Suggested Safeguards

BY F. H. WILLCOX

In working out any system of regulations for an industry it is necessary to consider the hazard of the occupation, the conditions of employment and the character of labor attracted to the work.

Illustrative of the experience of large companies with labor is this statement of the president of the National Tube Company: "There has been a marked decrease in the intelligence of these employees (i. e., blast furnace workmen) during the past 12 or 15 years, largely, we believe, because intelligent men did not wish to work seven days per week, and, therefore, sought employment in other departments." The percentage of men earning over $700 per year is less at blast furnaces than in any other branch of the iron and steel business. This was expressed prior to the inauguration of the six-day-a-week plan of employment. At present, the grade of furnace men is unquestionably better than the above statements would indicate. The elimination of a portion of the transitory force is offset by those experienced men who left furnace work on account of curtailment of earnings. The lean year through which the furnace industry has passed has eliminated from those plants having two or more stacks a considerable proportion of the floating labor, the older, most efficient and intelligent men being retained. With a resumption of capacity operation, there must be a taking on of unskilled, inexperienced hands, and it may be expected that the grade of men employed will again adjust itself to the comparative wage scale and conditions of work.

IRREGULARITY OF EMPLOYMENT

The second condition to be noted is the irregularity of employment. The maximum changes in daily production over an eight-year period, as compiled from *The Iron Age*, are:

	Average daily production, tons	Monthly average
1907	35,000	decrease
1908	22,000	increase
1909	27,000	increase
1910	28,000	decrease
1911	13,000	increase
1912	25,000	increase
1913	26,000	decrease

The 1910 census takers give an average daily production, per man employed, of 1.8 tons pig iron. At present it is probably near 2.5 tons. The significance of the tonnage fluctuation appears when we convert tonnage to employees, and taking two tons as an average for the period we have:

1907	17,500	men discharged
1908	11,000	men hired
1909	13,500	men hired
1910	14,000	men discharged
1911	6,500	men hired
1912	12,500	men hired
1913	13,000	men discharged

While strict adherence to these figures would be very misleading, they indicate a very probable fluctuation of from 10 to 33 per cent. in the men employed at furnaces from year to year. This condition exists throughout each year, the average daily production by months during the last three years showing variations of from 1000 to 10,000 tons daily production from month to month. The conclusion is irresistible that there is a continuous shifting of force, both from plant to plant and from occupation to occupation. The handicap to the safety, carefulness, experience, foresight and "plant sense" of the crew must be apparent to all familiar with the handling of labor.

METALLURGICAL HAZARDS

The third item of importance to be emphasized is the character of the hazard in furnace work. This may be classed in four groups: (a) Hand labor, in loading, unloading, piling, handling material, clean up, etc.; (b) mechanical and electrical; (c) transportation; (d) metallurgical, or purely furnace hazard. Aside from stating that the accidents and causes of accidents occurring in the work comprised in the first three classes are not widely different from those occurring in other industries under similar classification, this paper cannot take up detailed discussion of them other than to point out that the hazard of many employees in occupations about the furnace, distinct from furnace work, is increased by the chance of being involved in an accident having its origin in a metallurgical operation.

Metallurgical or furnace accidents may be consider to comprise: Asphyxiating gas. Burns or other injury from handling hot metal, slag, flue dust and gas. Explosions of metal, slag and gas. Furnace slips. Breakouts. Injury from machines typical of and largely limited to furnace operation. Pig casting machines, iron breakers, ladles, skips, scale or larry cars, ore bridges and car dumpers, gas washers, gas engines and blowing engines.

Considering therefore that men about furnaces are not of the highest paid grade, that new men are constantly being added to the force, both in normal operation and by reason of fluctuating production, and that these men are not only exposed to the average industrial hazards, but also to an added danger peculiar to handling hot molten metals and slag, hot poisonous and explosive gas, work with novel machinery and at elevations, the probability of more or less heavy slips, and finally to the ever-present, if remote, possibility of breakouts, explosions or asphyxiation, it becomes apparent that the fundamental idea toward which regulations, if we are to have regulations, should aim to be a detailed and explicit statement of features of construction, operation and practice, to include first of all and most essential on account of the grade of workers, every practicable safeguard and every method of practice that can be reasonably insisted upon. Such a program looks somewhat stupendous, but it is really not as formidable as it looks at first glance.

REGULATIONS AND SAFEGUARDS

In presenting the following suggestions for regulations it is desired only to point out the field; to indicate the possible scope and to emphasize that, while safeguarding should be carried out to the fullest extent, the state, in so far as it is able to do so, should insist upon certain methods of practice. It will prove both futile and dangerous to lay down regulations until study in the field and consultation

*From a paper presented at the Second Annual Conference of the Pennsylvania Industrial Welfare and Efficiency Conference, Harrisburg, Pa., November 17 to 19, 1914. The author is a metallurgical engineer with the Bureau of Mines, Washington, D. C.

with operating men and those experienced in accident prevention in the industry has been carried out very fully.

In this connection I should say that it is not the function of the Bureau of Mines to state what any operator must do. It is its duty to point out what any operator may do, or to co-operate with state bureaus in making conditions of employment more safe. Some of the suggestions for safeguards are:

ASPHYXIATION

Safeguards.—Thoroughly railed platforms at all elevated places where it is necessary to work in proximity to furnace gas, with permanent means of access to same. Gates or automatic warning at the approach to hazardous places of work. Locking devices for operating valves, levers, or switches on bells, boilers, stoves or gas washers. Approved design of water-seal valves. Use of mechanical stop valve in addition to water-seal valve when work is necessary on mains in proximity to operating furnace. Methods of drafting out gas flues and testing for gas before working on them. Size and spacing of manholes in gas mains. Provision of oxygen helmets. Means of summoning help to furnace top. Safe practices to be insisted upon.

Watcher to accompany those working in gaseous air. Use of belt and life line where of benefit in case of asphyxiation. Provision of lines where there is probability of its being necessary for rescue man to enter hazardous place. Inspection of valves at boilers, stoves and washers before men start work inside. Continual safe working supervision in hazardous work.

HOT METAL, SLAG, FLUE DUST AND FLAME

Safeguards.—Safe means of opening and closing tap hole and cinder notch. Design and use of shields for use at punch out, shutters, skimmers, etc. Provision of goggles and masks. Question of feasibility of railings along runners or walks over runners. Operation of gates. Means of exit from cast house. Protection against flying coke, flame, slag, etc., from tap hole. Problem of bursting tuyeres. Permissible eyesights. Rules for transportation of hot metal and slag. Protection for pourers and trough men at pig machine. Equipment of ladles to prevent overturning. Means of dumping and wetting down flue dust. Carding of flue dust cars and unloading at dump trestle or sintering plant.

EXPLOSIONS

Safeguards.—Dangerous situations often arise suddenly, and can be met only by experience, coolness and common sense. The use of steam to mix with a gas-air mixture has been attended with explosions and is attended with success only when it is used with understanding, and at times considerably in advance of the danger point.

Blast main explosions cannot occur, supposedly, if the blowing engines are turning over. Unfortunately, when they do occur, they usually leave no evidence behind. It should be a legitimate field to consider the use of automatic check valves on the hot blast main, at hot blast valves, mixer pipes and the engines; also the use of steam to flood the cold blast main should it catch on fire or the engine stall.

For these classes of explosion the best means of prevention might be a compilation of methods of practice which have or have not been attended with success. Operating men would welcome such information and it would probably be of as great service as regulations.

BREAKOUTS AND SLIPS

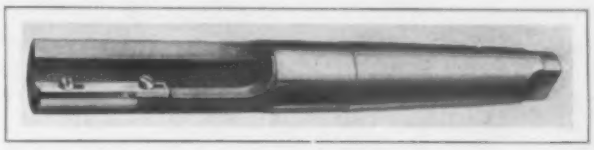
Breakouts above the mantle are extremely rare. Bosh breakouts occur at long intervals, as do those at the tuyere breast. Hearth breakouts are still a possibility of not infrequent occurrence. Aside from the draining of the hearth, repairs and annoying (?) clean up, no injury to life or limb usually results from hearth breakouts, provided the metal does not come in contact with water, or damp sand, brush or rubbish. It may prove feasible, after investigation, to urge the elimination of wells or ditches about the hearth jacket and to advise concerning hearth construction and repairs.

Slips vary in violence from "rolls" to slips of explosive violence. Safeguards in this connection are: The provision of means of quick exit from the furnace top other than down the skip incline. A shelter on top for refuge. A covering over bell cylinders, sheave wheels, etc., where men must frequently go for oiling or observation. Substantial fireproof ropes on crane operator cabs, cast houses, winches in proximity to furnaces. Warning whistles to enable foremen or bell operator to give timely notice to yards, trestle and stove-cleaning men of an impending slip. Provision of shield in front of explosion doors which throw material toward locations in frequent use, i. e., trestles, gates, roadways. Insistence upon safety bleeders in new construction or where furnace shells are of sufficient strength to warrant their use.

A final word would be to again state the importance of bearing in mind that the labor the state must protect is not of the highest paid and, hence, not of the most intelligent grade; that the hazards we have got to consider are most varied, ranging from the most elementary accident to the most involved type of a technical nature; and, in conclusion, to emphasize the importance, as I see it, of developing a very definite, comprehensive ruling for every point covered.

Drill for Procuring Test Specimens

To decrease the high cost of extracting coupons for tensile and bending tests the Triangular Tool Company, Erie, Pa., has placed a core drill on the market. It has an inserted cutter which can be



An Inserted Cutter Drill Designed to Secure Coupons for Tensile and Bending Tests of Steel

replaced readily instead of grinding down the edge of the tool itself. The holder is made of heat-treated chrome vanadium steel which is relied upon to withstand long and severe service without replacement. The cutters are made of high-speed steel.

For high-carbon steel a speed of 25 r.p.m. and a feed of 0.01 in. is recommended by the builder, the speed being doubled and the feed decreased when specimens are being taken from low-carbon pieces. The drill, which has a No. 5 Morse taper shank, will core out a piece in 20 to 25 min. from steel of any grade without requiring withdrawal of the tool to clean out the chips.

Niles Forge & Mfg. Company to Enlarge

The Niles Forge & Mfg. Company, Niles, Ohio, has increased its capital stock from $30,000 to $75,000 and has awarded contracts for two additional factory buildings which will largely increase its capacity. Charles T. Swaney, formerly of Niles, but for the past five years secretary and treasurer of the Massillon Rolling Mill Company, Massillon, Ohio, has become associated with the company in its reorganization and has been elected president and treasurer. Noble T. Robbins was elected vice-president; Homer L. Thomas, secretary and manager of the sales department, and O. O. Hewitt assistant secretary. M. H. Stauffer, formerly with the American Bridge Company, will have charge of the plate and structural iron department and B. J. Rosensteel will remain at the head of the forge department. The plant additions will include a sturctural steel department, 50 x 200 ft., and a forge shop, 40 x 60 ft. An office building will also be erected.

The Southern Iron and Steel Industry*

How 1907 Panic Brought United States Steel Corporation in the South—The Southern Ore Supply—The South Progressive

BY JAMES BOWRON†

In 1906 John A. Topping became chairman of the Tennessee Coal, Iron & Railroad Company, being also president of the Republic Iron & Steel Company, and during the ensuing two years considerable enlargement of the steel works was undertaken with the assistance of F. H. Crockard, who became vice-president and general manager of the Tennessee Coal, Iron & Railroad Company and district manager of the Republic Iron & Steel Company. The enlargement of the plant and the reconstruction on a stronger and heavier scale were undertaken on the basis of using the duplex process instead of purchasing scrap in the open market. The amount of money required for reconstruction of the steel works and subsidiary plants was very great, and precluded the possibility of the payment of dividends on the stock. This stock was, therefore, held by a syndicate.

RECENT HISTORY

Miss Armes states that the sixteen men whose names she gives held more than one-half the entire capital stock, and that about $7,000,000 being expended during the two years, a large amount of this was borrowed through the firm of Moore & Schley, which borrowings in the autumn of 1907 amounted to millions of dollars. A large amount of this was with the Trust Company of America, New York City, which also held and controlled among its pledged assets the control of the Central Railroad of Georgia. At the hight of the panic of October, 1907, when Moore & Schley were called upon to take up the Tennessee Coal, Iron & Railroad stock, it could not be done, and the credit of that great firm, as also of the Trust Company of America, was apparently endangered. On November 5, 1907, as a result of suggestions made at a conference held by leading financiers at the house of J. P. Morgan, two transactions were carried into effect—the sale of the controlling interest in the Tennessee Coal, Iron & Railroad Company to the United States Steel Corporation and the sale of the controlling interest in the Central Railroad of Georgia to E. H. Harriman and associates, controlling the Illinois Central Railroad, and making the two an air line from Chicago to the South Atlantic. The simultaneous accomplishment of these two transactions released unavailable assets, and gave quick assets, money and credit to the concerns that were threatened. The runs stopped, public excitement subsided, and the great panic of 1907 was at an end.

The United States Steel Corporation had thus for the first time become interested in the South, and it is only necessary to refer to the minutes of the Birmingham Chamber of Commerce to see the cordial approbation of the South. The advent of the Steel Corporation was hailed with delight by all who were unprejudiced; and, speaking as one who has never owned a single share of its stock, the writer feels that it has been continuously the greatest single source of benefit that has ever come to the manufacturing South, whether considered from the standpoint of the magnitude of its importance or the breadth and liberality of its policy.

OTHER TRADE DEVELOPMENTS

During this time, however, in the neighboring State of Georgia they had not been standing still. In 1900 the Atlanta Steel Company, under George W. Connors, was organized to make hoops and cotton-ties, and started with one 8-in. mill, buying billets. In 1902 a light rolling mill was added for re-rolling. In 1905 were added two 35-ton open-hearth furnaces, a blooming mill and rod and wire mills to take over the surplus steel. In 1906 the company entered the production of spikes and in 1908 that of woven fence. It produced also wire nails and barb wire. This plant possessed no raw material of its own, buying pig iron, scrap and coal. Under aggressive and enlightened management it has kept pace with scientific development, utilizing its exhaust steam by low-pressure turbine, and under the presidency of T. K. Glenn maintains good standing in the competitive field.

In 1908 George W. Connors withdrew from the Atlanta Steel Company and took the old tube mill at Helena, Ala., changing it into a hoop and cotton-tie mill, having one 9-in. train with a capacity of 15,000 tons annually, under the title of the Connors-Weyman Steel Company. It purchases billets, but mines its own coal.

The panic of 1907 brought down the enterprise at Gadsden, Ala., of the Southern Steel Company, which had encumbered itself with the purchase of various properties, widely scattered, handicapped by inter-plant freights, and with brown ore deposits pockety in character, seriously affected by the intrusion of sulphur, and largely worked out, while the red ore deposits were squeezing down in thickness, becoming interfoliated with slate. After two years the enterprise was reorganized with the assistance of English and Dutch capital, and under new management, which provided additional money, removed the rod and nail mill machinery from Ensley to Gadsden, and built an extremely fine and well-designed wire drawing and finishing plant in connection therewith, and a combination Morgan roughing train and Garrett looping rod mill of 500 tons daily capacity. Unfortunately, no part of the money subscribed was expended in acquiring more reliable bodies of raw material, and the capitalization was entirely beyond the productive capacity of the plant, handicapped as described. In 1912 the company passed into the hands of the writer as receiver and trustee, and a new company was formed among the creditors and stockholders of the old one for the purchase of such of the assets as was deemed expedient. This company, under the name of the Gulf States Steel Company, is operating at a profit, free from bonded debt, and has an ingot capacity of 600 tons per day, making 18 x 20-in. ingots of 6000 lb. weight. It produces plain and galvanized wire, barb and woven wire fence, nails, merchant bars, and is arranging for the production of tie plates. It has also corrected the deficiency of its predecessor by the purchase of 1604

*Third and last installment of a paper presented before the American Iron and Steel Institute, Birmingham, Ala., October 30, 1914.

†President Gulf States Steel Company, Birmingham, Ala.

acres of Red Mountain ore, near Oxmoor, proved by the drill 19 ft 3 in. thick, over 38 per cent. metallic iron, and self-fluxing. This is being developed by a slope 9 ft. 6 in. x 17 ft. at a pitch of 50½ deg., which will intersect the ore at a lineal depth of 2482 ft., and at the time of this writing is about 1260 ft. deep. No water has been encountered in driving this slope below the 384-ft. level, where the direct cementation process was applied and the water stopped with a minimum of trouble and expense. The plans contemplate an output of 2000 tons per day from this operation.

UNITED STATES STEEL CORPORATION'S OPERATIONS

Since the advent of the United States Steel Corporation into the district, the development of the Tennessee Coal, Iron & Railroad Company has been continuous under the management of President Crawford, Vice-president Crockard and H. C. Ryding, assistant vice-president. The writer was asked to write a historical sketch. Mr. Crawford and his associates loom up before our eyes at this meeting, large physically, mentally, and from a standpoint of genial good fellowship. Their works will be open to the inspection of the members of the Institute, and will speak for themselves infinitely better than the writer can speak for them. It is only, therefore, for members of the Institute who cannot be present, and incidentally to bring a historical sketch, fragmentary though it is, down to date that the following outline description is given.

The Tennessee Company's Ensley plant of to-day embraces 6 modern furnaces, 90 ft. high, from 21 to 23 ft. bosh, two of which have the 12-in. lining with external vertical water cooling, the average production of basic iron varying from 350 to 400 tons from Red Mountain ore. Four furnaces, of which two are rebuilt at Alice and Oxmoor, vary between basic and foundry. Four furnaces at Bessemer are restricted to foundry iron, and one is held for ferromanganese, or special purposes. The company's operations at Ensley embrace under the duplex process eight 100-ton tilting open-hearth furnaces supplied by two mixers, 250 and 600 tons capacity, and two 20-ton Bessemer converters with total ingot capacity of 75,000 tons per month. Ingots 24 x 24 in. are reduced at the blooming mill to 8 x 8 in., or slabs up to 24 in. wide. These are reduced to 4 x 4 in. billets for the company's merchant mill at Bessemer, or for the American Steel & Wire Company's plant at Fairfield, or for the open market, or are alternatively delivered to the rail mill. The finished product of the rail and finishing mill is about 45,000 tons of rails, and at Bessemer 6000 tons of plates, angles and merchant bars.

The American Steel & Wire Company has at Fairfield a new plant, embodying 24 acres under roof, containing a rod mill driven by electric motors, with wire department equipped for the production of plain and galvanized wire, nails, barb and woven fence wire, etc. This plant runs entirely on steel furnished by the Tennessee Company, which also furnishes the motive power.

THE SOUTHERN ORE SUPPLY

It is impossible to pass away from the iron and steel of the South without a reference to the ore supply. It was supposed for many years that as mining operations were pushed down the pitch of the Red Mountain vein, the ore would (as it did near South Pittsburg, Tenn.) run into the original gangue and become lean. This view was held even so late as 1910, when bulletin No. 400 of the U. S. Geological Survey was published. Mr. Burchard's estimate gives 796,896,800 gross tons of red ore in the Birmingham district available for recovery and of commercial value. This is excluding seams too thin to be worked, and too low in metallic iron. A reference to the map on page 128 of this bulletin shows Oxmoor on the very verge of the available territory, and the drilling which has been done by the Woodward Iron Company, the Tennessee Coal, Iron & Railroad Company, and the Gulf States Steel Company has developed much additional territory which Mr. Burchard's conservative estimate did not include, although on his own figures he asserts reserve sufficient for 100 years on the present requirements of the district. The opinion of the writer is that, as the ore is both becoming thicker and slightly richer as it flattens out into the basin, Mr. Burchard's estimate of the resources of the district will need to be revised upward.

THE SOUTH PROGRESSIVE

It is impossible within the limits of a 30 minutes' paper to do justice to the subject of scientific development, but it is fair to say that the South has always been in keen sympathy with every method of improvement, although the scarcity of capital for many years restrained local management from such development.

During the past 16 years there have been constructed at Ensley 240 Semet-Solvay by-product coke ovens, of which 120 were contracted for by the officials of the Tennessee Company in 1898, who had, despite the war clouds, sufficient confidence and interest in the process, this plant being the first in the South and one of the earliest in the United States. Sixty of the same type are at Holt, Ala., for the Central Coal & Iron Company, while within the past four years there have also been constructed 280 Koppers by-product ovens at Fairfield and 170 by the Woodward Iron Company at Woodward, Ala. The gas from these ovens is used at Ensley in the raising of steam and calcination of lime and dolomite, and, most important of all, is now being used with much success in the direct operation of the open-hearth furnaces. At the foundry at Holt, where soil pipe is produced on a large scale, gas has been used for raising steam, melting iron, drying molds, and at one time for nodulizing. Sulphate of ammonia and benzol are also produced at Ensley and at Holt, and a benzol plant is building at Woodward. The large development of the cast-iron pipe industry in the district has afforded an improved market for the tar; this is still further needed in the improved method of road preparation under modern practice.

Exhaust steam collected at Ensley is utilized by four 3000-kw. low pressure turbo-generators furnishing power, not only for the entire plant of the American Steel & Wire Company, but also for the operation of the Tidewater Street Railroad. At the Atlanta Steel Company's plant the exhaust steam is similarly utilized for running the low pressure turbine at the blooming mill, and at Woodward by-product oven gas is carried to the boilers supplying turbo-generators providing current for the company's ore and coal mines.

Various experiments have been made from time to time in the utilization of blast-furnace slag, either for ballast, for mineral wool, or for cement. A more interesting development is the production to-day from open-hearth slag of phosphatic fertilizer, 80 per cent. of which will pass through 100 meshes to the in. The casting machine was a product of the South, to the credit of Mr. Uehling, while employed by the Sloss Company, and whose patent was purchased by the Carnegie Company. At a

later date the Tennessee Company installed a casting machine of the Jones & Laughlin type.

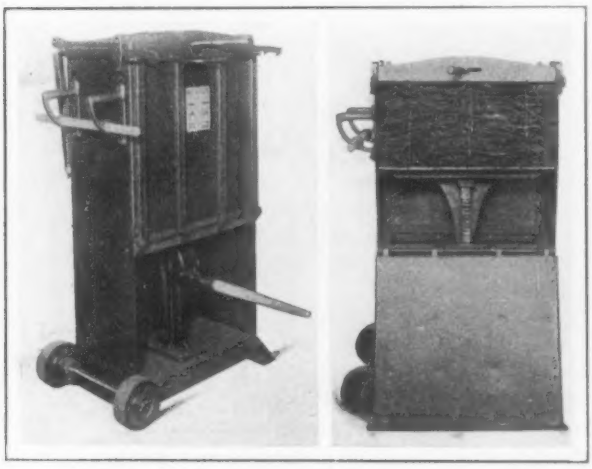
Arrangements have been made for the introduction of hydroelectric power and the installations are now proceeding by which a large capacity generated by the Alabama Power Company, on the Coosa River, will be within a few weeks delivered to the steel works at Gadsden, mines on Red Mountain, and to the mining operations of the Alabama Company at Attalla.

The Southern manufacturers of iron and steel realize that their advantages are very large deposits of self-fluxing ore and coking coal in close proximity; a fairly abundant supply of colored labor, docile and responsive to kindly treatment, but not of the highest efficiency; a balmy climate free from extremes, permitting outdoor work the year round, without danger from freezing weather; and with some prospect of navigation in the near future by barges to tidewater. Against these advantages must be set the distance from densely populated States, involving a sacrifice of profits by the necessary freight rates to reach the markets of the world; these markets, however, are put nearer to the South by the opening of the Panama Canal. The possibilities incidental to the barging of heavy material from the Birmingham district to Mobile at lower cost than present railroad rates, with the possible upbuilding of Mobile Bay by shipyards, graving docks, coaling stations and works for the construction and repair of marine engines, inspire the manufacturers of the South, drawing lessons from the past, to go forward facing the future with patience and with courage.

(*The End*)

Portable Press for Baling Metal Scrap

For compressing tangled wire, bushy turnings and light sheet metal, rubber or paper scrap into commercial shapes the Tempus Reclaiming & Mfg. Company, 441 North Third street, Philadelphia, Pa., has developed an interesting baling truck. It is intended for use in stamping works to bale the light skeleton scrap, as well as in places where baled goods are opened. In the latter case it serves as a receptacle in which to place the bale ties as they are taken off instead of throwing them on the floor to become a tangled, unwieldy mass. Truck wheels and handles are provided to enable the press to be moved about the plant from one machine to another and thus bale the scrap where it is produced instead of hauling the scrap to a central point for baling.



Views of a Truck for Compressing Metal Scrap Showing It Ready for Operation and a Finished Bale About To Be Removed

The charging box is 24 in. long, 12 in. wide and 24 in. deep and as the material is deposited it is rammed down. When the box is filled the lid is closed and locked and pressure is applied from beneath by a 5-ton jack, having a travel of 13 in. This reduces the volume of the mass by one-half, and it is bound while under pressure with wire, making a bundle of approximately 2 cu. ft., which weighs between 100 and 125 lb.

The sides of the truck are made of No. 6 gauge steel, while the door and back are of No. 12 material, 1½-in. angle iron being used at the corners for reinforcing. The door is hinged to a cast-iron frame in the center, and the cast-iron top or lid is of a ribbed box pattern. A single lever at the front locks the lid, when closed, by two bolts, which are ½ in. in diameter. Two spiral springs at the back of the machine act as a counterweight for the lid. The bottom of the truck is made of 2½-in. yellow pine planks, reinforced by two 2-in. angles, and rests on angle irons which are riveted to the sides. The jack used to supply the pressure for compression is of the lever type. It is fitted with a special top having an extension leg that divides the pressure beween the top of the rack bar and the foot of the jack. A plate of ⅜-in. steel, reinforced by two angles, forms the ram which is located on the top of the rack bar.

A New Manganese Steel

An improvement in manganese steel alloys is announced in a recent patent (U. S. 1,113,539—October 13, 1914) granted to William Campbell, John H. Hall and Henry M. Howe. It offers a new class of such alloys said to possess the characteristic hardness of the regular manganese steel but containing a lower amount of manganese. This is said to render its production cheaper and afford practical advantages in certain other respects. Commercial manganese steel contains from 11 to 14 per cent. of manganese and hitherto any attempts to produce a steel lower in manganese than 10 to 11 per cent. has tended to make a metal nearly as brittle as glass and unfit for commercial use.

The invention is based on the discovery, made by the inventors, that a certain critical relation exists between the percentage of manganese and the percentage of carbon employed with it in the alloy and that by proportioning the carbon ingredients in accordance with this relation, a steel may be obtained containing from 6 to 9 per cent. of manganese or as low as 5 per cent., and "possessing to a very valuable degree the characteristic combination of ductility with hardness and the other important properties of the richer alloys." It is believed that there is a practical limit, around 5 per cent., for the diminution of the manganese, according to the invention. For practical reasons the limits of this relation have been narrowed by the inventors so that in its preferred form, the product having in its composition an amount of manganese less than 9 per cent., and somewhat more than 5 per cent., contains carbon, other than graphite, between or not materially exceeding the following narrower limits, viz. $1.075 - .04$ of the percentage of manganese as one limit, and $1.075 + 1/3$ of the percentage of manganese as the other limit, the percentages being taken with reference to the whole. For example, for an 8 per cent. manganese steel the preferable limits for the carbon are $(1.075 - .04 \times 8) = 0.755$ per cent. and $(1.075 + 1/3 \times 8) = 1.342$ per cent., the particular amount of carbon present being controlled within these limits and according to the degree of ductility required in the product.

The ingredients of the product are preferably brought together in a molten state, as is usually the custom with manganese steel alloys and in the above proportions. After casting, the metal is properly water-toughened. The new alloy is a poor conductor of heat and practically nonmagnetic.

The patent has been assigned to the Taylor-Wharton Iron and Steel Company, High Bridge, N. J.

SAFETY IN PENNSYLVANIA

Growth of the Movement Brought Out at the Second Annual Conference at Harrisburg

The "Safety First" movement in Pennsylvania has attained large momentum in the past two years. Concrete evidence of this is the pronounced success of the Second Annual Pennsylvania Industrial Welfare and Efficiency Conference held at Harrisburg, November 17, 18 and 19. It was called by the Department of Labor and Industry of the State, John Price Jackson, commissioner, and was held under the auspices of the Engineers' Society of Pennsylvania. Nearly every branch of industry in the State was represented in the registered attendance of about 1400. The personnel was a remarkable demonstration of the results achieved by a propaganda begun by Commissioner Jackson a little more than a year ago. Corporate and labor interests were largely represented and worked in harmony throughout.

The meetings were held in the State Capitol, whose spacious rooms added attractiveness to the occasion, and were sectional in character, embracing simultaneous sessions covering safety, hygiene, welfare and general subjects. Official employment agencies to prevent human waste were urged by Commissioner Jackson in opening the conference. He stated that of half a million men employed in the regulated trades in the State, one-fourth change their places of employment oftener than once a year,

Pennsylvania's steel companies and other manufacturers are taking an active interest in the campaign for safety. Nearly all of the large companies had representatives present and some of the subjects discussed bore directly on the steel or metal trades.

A UNIFORM BOILER CODE

One of the sectional meetings Thursday morning, the safety section, was presided over by C. L. Close, New York, who is manager of the bureau of safety, sanitation and welfare of the United States Steel Corporation. An interesting paper at this session was by Thomas E. Durban, Erie City Iron Works, Erie, Pa., who discussed "Uniform Boiler Code." He said that boiler laws and specifications vary so widely for different States and even for different cities in the same State that a boiler that could be installed in one State or city would not be allowed in some other State or in some other city in the same State. He emphasized the fact that not enough attention has been paid to the safety of mills and buildings in boiler installation. While many attempts to secure a uniform code had been made by American boiler makers, only lately and working in conjunction with the American Society of Mechanical Engineers had they success in sight. The thorough investigation by this society of not only conditions in this country but of experience abroad was resulting in the formulation of a report which would rank as the most careful study of the kind or of a similar nature ever undertaken. Some States were waiting, he said, for this report before formulating a State code.

At the same meeting F. H. Willcox, metallurgical engineer, Bureau of Mines, Washington, D. C., read a paper entitled "Suggested Regulations for Blast Furnaces," from which quite full extracts are given elsewhere in this issue. J. B. Ayres, superintendent of safety, National Tube Company, McKeesport, Pa., commenting on Mr. Willcox's paper, said that in the early days blast furnace work was not so hazardous an occupation, but that it had become more prolific of injuries than any operation involving the handling of raw materials. While safety devices have reduced these greatly he sustained the suggestions offered by Mr. Willcox.

On Tuesday, at a session devoted to safety, A. H. Schultz, chief safety inspector, American Steel & Wire Company, Pittsburgh, discussed "Hoists, Cranes and Conveyors." He emphasized the suggestion that only trustworthy, sober men be placed in charge of conveying machinery and stated that promotions in general are now dependent on soberness. He suggested some rules for the safe operation of cranes and stated that overhead traveling cranes should be what are known as all-steel construction, no cast iron being incorporated except for minor parts.

HYGIENIC AND WELFARE TOPICS

At the session on hygiene on the same day C. A. Smith, president Pittsburgh Emery Wheel Company, Pittsburgh, discussed "Polishing and Grinding Machinery." In an address on "Foundry Regulations" J. K. O'Leary, International Molders' Union of North America, Worcester, Mass., made a plea for safe and sanitary conditions in mills and foundries, claiming that expenditures to promote these were to the advantage of employers and would do much to lengthen the present 10-year term which is, he said, the average for most workers in the foundry after coming from apprenticeship.

At the safety section on Wednesday, W. P. Eales, supervising inspector Travelers' Insurance Company, Philadelphia, offered a paper on "Machine Tools and Power Transmission," pointing out what is best and most practical as standard safeguards, with special reference to shafting, pulleys, belts, gears, etc.

Among the welfare topics at the various sectional meetings one that attracted deserved attention was "Community Welfare," discussed by Florence Hughes, superintendent of the Neighborhood House of the New Jersey Zinc Company, Palmerton, Pa. She told how the company had improved the condition of its workers by the establishment of a neighborhood house with a kindergarten attached. This led to other social activities which soon brought into harmony the employees of various nationalities, as into one big family, with the result that first a free library, then a gymnasium and later a savings bank and an elaborate manual system were established. She felt that money thus expended gives better results to all the employees and their families than if pro-rated among them in added wages.

A feature of Wednesday afternoon's session was the conferring upon Governor John K. Tener of honorary membership in the Engineers' Society of Pennsylvania by Herbert F. Snow, engineer of the Public Service Commission and former president of the society. Governor Tener, who had opened the session formally, replied fittingly to the presentation.

THE EXHIBITION

A prominent feature of the conference was the large exhibition of machinery, safety devices, etc., held in the commodious Chestnut street auditorium from Monday to Friday. This deserves special mention because of its extent and the effort and outlay that made it impressive and complete. It was more than a safety exhibition in that it has already become a meeting place of producer and consumer, where many producers, including steel companies, in Pennsylvania and other States exhibit their products as well as their devices for the promotion of safety and health. Over 90 exhibitors made a display that in attractiveness and interest vied with the exhibits of larger organizations.

Prominent among the steel and machinery exhibitors were the following: Alliance Machine Company, Alliance, Ohio; American Iron & Steel Mfg. Company, Lebanon, Pa.; Cleveland Pneumatic Tool Company, Cleveland, Ohio; Cleveland Steel Tool Company, Cleveland, Ohio; Cyclops Steel Works, Titusville, Pa.; General Electric Company, Erie, Pa.; Harrisburg Pipe & Pipe Bending Company, Harrisburg, Pa.; Pennsylvania Steel Company, Steelton, Pa.; Reading-Bayonne Steel Casting Company, Reading, Pa.; Standard Tool Company, Philadelphia; Superior Oxygen Company, Pittsburgh; Pittsburgh Steel Foundry, Pittsburgh; Duff Mfg. Company, Pittsburgh. The Pennsylvania Steel Company showed its Mayari steel in various products, such as the large balls used by cement manufacturers, a hardened wedge driven through a block of soft steel, various forgings of the same steel, as well as a sample of the 150-lb. low-carbon conductor rails which it is producing for section 307 of the New York Municipal Railways. The Harrisburg Pipe & Pipe Bending Com-

pany made prominent some samples of 32,000 shrapnel shells of alloy steel which it is producing for the United States Army and some steel cylinders for holding oxygen, acetylene, etc., as well as sections of plates from 4 to 18 in. wide and 0.062 to 1 in. thick which it rolls on its 20-in. universal mill. The American Iron & Steel Mfg. Company, Lebanon, Pa., had an extensive display of bolts, nuts, rivets, etc.

The National Council for Industrial Safety occupied a prominent booth, presided over by L. R. Palmer, its first vice-president. It called particular attention to the following achievements of prominent companies in reducing accidents, as expressed in percentages: Illinois Steel Company, 70 per cent.; Fairbanks Morse Mfg. Company, 72 per cent.; Inland Steel Company, 55 per cent.; International Harvester Company (Wisconsin Steel Company), 68 per cent.; Jones & Laughlin Steel Company, 71 per cent.; Packard Motor Car Company, 67 per cent.; Pullman Company, 70 per cent., and the United States Steel Corporation, which since 1906 had saved from serious injury or death 11,074 men. The New Jersey Zinc Company's display of a model of its neighborhood house at Palmerton, Pa., as well as other means for promoting its employees' welfare was especially interesting.

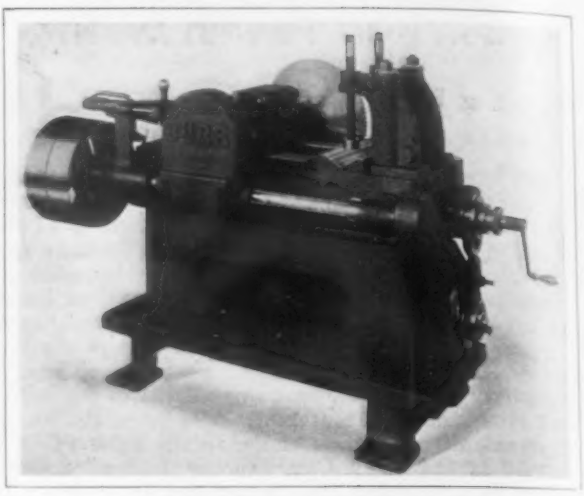
The exhibition was under the supervision of J. V. W. Reynders, vice-president of the Pennsylvania Steel Company, as chairman of the exhibit committee, and of Paul Gendell as director.

Worm-Driven Cold Sawing Machine

A cold metal sawing machine of medium size which transmits power to the saw arbor through a worm and worm wheel has been developed by John T. Burr & Son, 429 Kent avenue, Brooklyn, N. Y. It is designed for cutting off round stock up to 5 in. in diameter, flats measuring 3 x 6 in. and square bars up to a maximum side dimension of 4 in. For handling larger sizes of flat bars and beams, etc., it is necessary to remove the V-block, which serves as a stock rest, and to clamp the work directly to the table with bolts and straps, it being possible to remove the vise arches whenever that is found desirable or necessary.

The carriage is of heavy construction and is fastened to the bed by gibs. A travel of 6½ in. on the bed is provided for the carriage, and this is relied upon to add to the usefulness of the machine on special work. Long bearings are provided for the saw arbor, which is forged, and the driving wormwheel shaft. The saw blade, which is of alloy steel, is about 14 in. in diameter and 5/32 in. in thickness. The relief is constant from the rim to the center, which, it is emphasized, enables the blade to be ground until the diameter is reduced as much as possible. The blade runs in a large oil basin, having sufficient capacity for the chips produced in a single day, and is fastened to the arbor collar, which is solid with the arbor, by three screws. Positive feed is provided through a screw actuated by a ratchet and double pawls. Either one or both of the latter can be used, their travel being varied by changing the pin in a double eccentric, which is driven from the side shaft through a chain and sprockets located at the right end of the machine. A clutch controls the engagement of the feed, and when the carriage reaches the end of its travel, the feed is automatically disengaged. For convenience in duplicating work, a stock stop is included in the equipment of the machine, so that any number of pieces may be cut to the same length without it being necessary to measure every one.

The drive consists of a splined rod parallel to the bed, to which a large diameter steel worm is fastened by a feather. This worm is carried in a bracket attached to the carriage and has a ball thrust bearing. It meshes with a bronze rim wormwheel and transmits power to the saw arbor through a pair of wide face steel pinions. When motor drive is used, the motor is mounted on a platform bolted to the frame at the left in place of the tight and loose pulleys shown. The motor usually furnished is rated at 2 hp., and operates at a speed of 1800 r.p.m. The connection between the motor and side shaft is made by a rawhide pinion and cut gear, both of which are guarded.

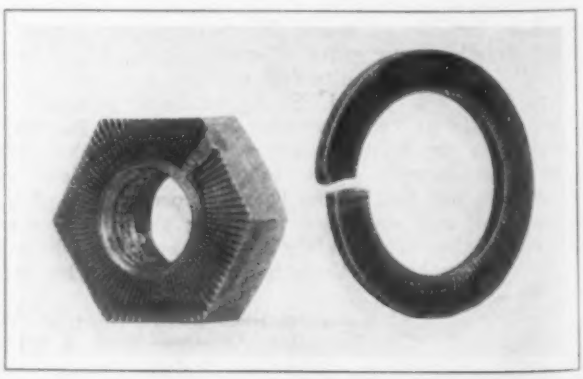


A Recently Developed Cold Metal Sawing Machine Having a Worm Drive

Included in the equipment of the machine is a bench saw grinding device which enables each tooth to be ground to the same depth easily. The time required to remove the saw from the arbor, grind and replace it is not over 20 min. and skilled labor is not required.

A Corrugated Lock Washer

To increase the gripping power of the lock washer of the split and warped ring type, the National Umbrella Frame Company, Thirtieth and Thompson streets, Philadelphia, has brought out a lock washer with corrugated or ratchetted bearing surfaces. It is claimed that this surface is superior to the lock washer with upset ends, in that it guarantees a uniform bearing surface against the nut and backing. In the upset type the pressure is greatest at the ends, and at 180 deg. from the ends, while at points half way between, it is considerably less. It is asserted that this uneven pressure causes vibration in the washer, a consequent crystallization of the steel and inevitably fracture, which the even bearing surface does away with. By this elimination of vibration and fracture, it is held that this washer is especially adaptable for severe usage, such as on automobiles, railroad equipment and machinery in general. The corrugations moreover give the washer the needed locking power, which it is asserted the plain washer lacks.



A Lock Washer of High-temper Steel Shown at the Right with Both Faces Corrugated to Give a Greater Locking Power. To the Left a Nut Showing the Locking Effect of the Washer When Forced Against the Nut

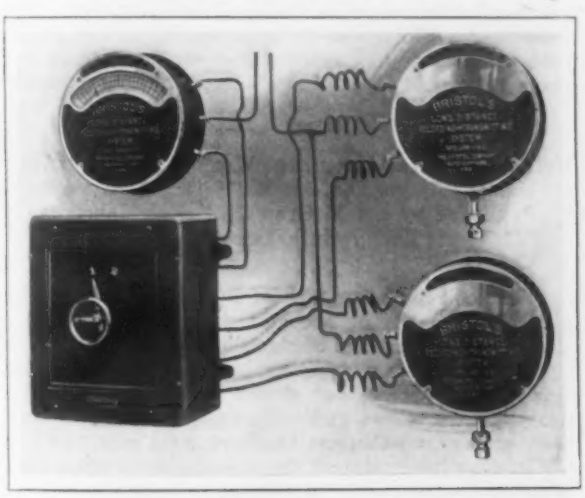
RECORDING AT LONG DISTANCE

Indicating Pressures, Temperatures, Etc., Miles from Point of Observation

A system for transmitting the readings of recording instruments electrically and indicating and recording them, say, 30 miles away, has been developed by the Bristol Company, Waterbury, Conn. The system employs standard Bristol instruments, equipped with a special long distance induction balance movement that has been developed by the Sangamo Electric Company, and is intended to give automatic and continuous records of pressures, liquid levels, temperatures, mechanical motions, etc., at points which may be a considerable number of miles away from the points at which the transmitting instruments are located, the only restriction being the size of the transmission wires used and the potential of the electric current.

The system is the commercial development of an outfit that was installed some four years ago at Peoria, Ill., to indicate at the central station the steam pressure at the end of a steam heating main. Indications from a number of points can be received on a single indicator by using a rotary switch, having the same number of contacts as there are transmitters employed.

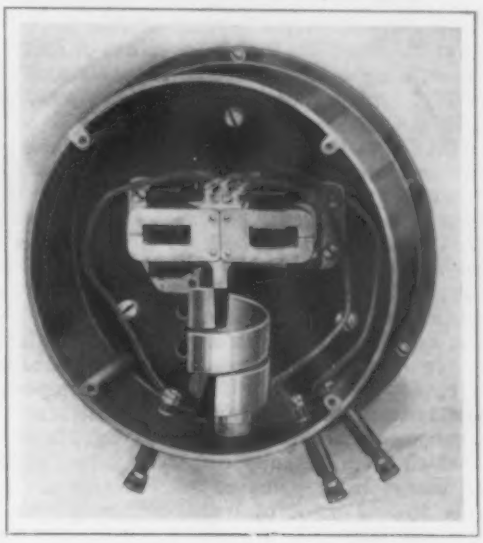
The fundamental principle of the system is that of the induction balance. The transmitting and receiving instruments are each equipped with two



A Combination Outfit Enabling Readings of Pressures, Temperatures, Etc., at Either One of Two Points to Be Obtained on a Single Receiving Instrument

pairs of coils arranged to swing in a horizontal plane over iron cores. In the illustration of the interior of one of the transmitting instruments the helical pressure tube and the electrical transmitting device are shown in the operating position. The coils in the instrument are connected in parallel to an alternating-current circuit, one pair being used for the transmitting instrument and the other for the receiving one. When the solenoids of the transmitter and receiver are connected in parallel with an alternating-current circuit and the transmitter coils are kept in a certain position by the operating mechanism, which may be either water level or pressure gauge, thermometer, etc., the relative amounts of current flowing in the solenoids depend on their positions with respect to the iron cores produced by the inductive effects of the latter. In the transmitter the operating mechanism is linked directly to the solenoid by an arm.

At the receiving instrument the other pair of solenoids are mechanically balanced and free to take an angular position which will be the same as that of the transmitter since the flow of current in the receiver solenoids will be the same as in the corresponding ones in the transmitter. If the operating mechanism at the transmitter should change the angular position of the solenoids, the inductance in one solenoid will be increased and that in the



Interior of a Transmitting Instrument Used in Connection with a Long Distance Electric Recording and Indicating System

other diminished on account of movement toward or away from the iron cores and the flow of current will vary correspondingly. These changes in the current flow at the transmitter will produce corresponding changes at the distant receiver and the pair of solenoids will take a position of balance that will be the same as those of the transmitter. The indicating pointer at the receiver is connected to the solenoid by an arm and a multiplying mechanism which is said to be practically frictionless.

If desired, a recording receiver can be substituted for an indicating one, in which case the recording pen is connected to the solenoid. Either indicating or recording instruments can be furnished for the receiver or transmitter, or the two types may be combined should this be found desirable.

Belt Nearly a Seventh of a Mile Long

One of the largest rolls of stitched cotton duck belting ever made was recently turned out by the Gandy Belting Company, Baltimore, Md. The roll is 712 ft. long, 36 in. wide and weighs 6000 lb. If the belt were unrolled to its full length it would cover more than three city blocks, and its weight is such that four horses are required to haul it. The belt is of the maker's standard type and is made of a special weave of heavy weight cotton duck stitched with a heavy sewing cord on patented machines to give an imbedded stitch that leaves the surface of the belt smooth, the stitching being done while the belt is under tension from end to end. A special width of belt was woven in this case, as is the regular practice of the Gandy Company, to give a selvage and even strain on both edges. In common with all the belts produced by this company, it was subjected to a special oil process, with a view to rendering it water, oil, steam, heat and dirt proof, as well as keeping it pliable and adding to its life.

The Zenith Furnace Company, Duluth, Minn., has torn down the old stack at its blast furnace plant and is building a new shell of the same dimensions. This and the necessary relining will constitute the improvements that will be made before the furnace again goes into blast.

Book Reviews

Metallurgy: A Condensed Treatise for the Use of Students and Any Desiring a General Knowledge of the Subject. By Henry Wysor, B.S., professor of metallurgy at Lafayette College, Easton, Pa. Second edition. Pages, 308; illustrations, 88. Published by Chemical Publishing Company, Easton, Pa. Price $3.

A sentence from the preface of this book is worth quoting: "Aside from the prerequisites of accuracy and clearness, class books should be readable and well balanced." To review books written with such an ideal is a difficult task because whether we will or not we are quite apt to accept without comment those portions which come up to the author's statement of his ideal and dwell only on those which fail to do so. The question arises, whether the subject of metallurgy is worth teaching in so condensed a form; but as the author has written this book to fill a need of his own in collegiate work we must assume that this question can be answered affirmatively.

The English of the work is good, in the main, though there are a number of passages whose arrangement could readily be bettered for ease of comprehension. For instance, under the head of "Thermometer Scales" this sentence occurs, p. 29: "The centigrade or Celsius scale which is universally employed in scientific work places the melting point of pure water ice at zero and the boiling point of water under 760 mm. pressure at 100 degrees." Anyone familiar with the subject knows perfectly what is intended, but to the student the sentence would be more comprehensible if it brought out the fact that the thermometer scale was fitted to the freezing and boiling points of water rather than the reverse. The work contains at intervals diction of this kind which has not been sufficiently studied to see if it were capable of misunderstanding.

A section of 100 pages deals with metal characteristics, ore-dressing, furnaces, furnace equipment, fuels, pyrometry, etc.; one of 124 pages dealing with iron and steel and 149 pages dealing with all other metals and alloys—a fair balance for a book intended for use in the eastern half of the country where the iron and steel industry so greatly predominates.

The balance of the individual features is not always so good. For instance, under the head of "Ore Dressing" eight pages are devoted to crushing and grinding machinery, several types of which are fully illustrated, while no mention is made of tube mills, ball mills, or the Hardinge conical mill. In the section dealing with gold the statement is made: "Of the different mills employed for crushing gold ores but two need be mentioned here—the stamp and the Huntington mills." The present practice in crushing in the great gold producing districts would hardly seem too justify this statement. Similarly, under the head of pyrometry three pages out of a trifle over four are devoted to a detailed description of the rather complex recording mechanism of one of the least known pyrometers in practical use, although an excellent instrument, while one of the very best and simplest forms of recorder in quite general use is denied even mention.

The most serious defect of the work as a whole is that it contains in various places statements that give an utterly incorrect idea of the true conditions. The writer has evidently had no personal familiarity with a great portion of the subject and has taken information from various sources, and in many cases without much respect to its being recent. For instance, the two pages devoted to the subject of charcoal could hardly give a more erroneous impression. Most of the space is devoted to a description of the pit method of charring wood, though this has been obsolescent for 20 years or more, and probably does not produce 3 per cent. of the charcoal made in this country. The retort is dismissed with a line as producing an inferior grade of charcoal (although it probably produces the best), and the kiln, which produces more than half of the coal made, is not even mentioned. Similarly, in respect to by-product coke ovens, one type is mentioned as the most prominent, though it is the one of which the fewest plants have been constructed in recent years.

The hardening and tempering of steel is another subject of which the treatment has been most unfortunate. The statement is made that the highest temperature of quenching yields the softest steel. The paragraph is obscure, but the meaning which one derives from it is exactly the opposite of the fact.

The blast furnace is treated at some length, but only a half page is devoted to the heat balance and one is given which is many years old and not in agreement with the best modern calculations on this subject, as it shows an efficiency of the furnace of 38 per cent. against 50 per cent. in good modern practice. The dry blast is treated quite extensively, but no explanation of its surprising results is offered and no mention of a critical temperature as the key to the action of the furnace is made in any place. A picture of a "trompe" for blowing a finery forge is shown, but none of a blast furnace blowing engine.

It is stated that increase in blast pressure increases the penetration, whereas increase in pressure alone decreases it, and the statement is made that the hard, firm cokes are always preferred, whereas some small furnaces pay a high premium to obtain a softer coke.

The treatment of the nature of cast iron is most unsatisfactory. Much of the information on which it is based is very old and utterly at variance with the facts as now known.

Melting furnaces for crucible steel are described as generally coke fired and the regenerative gas furnace is alluded to as if it were a matter of secondary interest, though it may be doubted if a pound of crucible steel is made in the country in coke-fired furnaces.

These are not unimportant details, errors as to which are trivial; they are some of the fundamental facts of metallurgy. It really is deplorable that mistakes of this magnitude should be perpetrated upon students who have not the opportunity of the practical man to discover and reject the error, but accept everything they read in a textbook as absolutely accurate.

J. E. J., JR.

Methods of Machine Shop Work. By Frederick A. Halsey. Pages 286, 6¼ x 9¼ in.; illustrations, 285. Published by the McGraw-Hill Book Company, Inc., 239 West Thirty-ninth street, New York. Price, $2.50.

The book includes much of the matter that has been given by the author recently in his lectures to the students in mechanical engineering at Columbia University. As the author explains, he does not show how machine tools operate, but shows how the machine shop problems are solved and what tools are needed to solve these problems. Caution has been used in giving credit for leading inventions in these lines due to the difficulty of apportioning credit to various inventors whose work was along the same lines.

The book starts with the distinction between the making and the manufacturing systems. Thus in the making system come the machine tools developed mostly in England and the United States, commonly called standard tools, such as the lathe, the planing machine, the boring machine, the shaping machine, the slotting machine, the drilling machine and the gear cutting machine. In these, the workman himself determines the dimensions by adjustments and direct measurements for each piece. In England, such men as Whitworth and Bodmer are credited with laying the foundation of these machine tools, while later in the United States such progress was made in their development as to outdistance England. It is pointed out that by the improvement in gauges and accurate measuring appliances came the ability to duplicate and to develop the manufacturing system which without such precision instruments would have been impossible.

About four chapters are devoted to precision work, measurements and gauges, with one chapter on machine fits and limits. Floor plate work is included, and there is a chapter devoted to each one of the main machine shop operations, such as turning and boring, drilling, milling, gear cutting and grinding. Each chapter has many illustrations of machines and methods, and altogether they constitute a valuable treatise on ma-

chine shop work. It will be of interest to mechanical students and machinists, and is well worth a place in the library of the machine shop manager.

The Iron Ores of Lake Superior. By Crowell & Murray. Pages 270, 6 x 9 in.; 5 maps. Published by the Penton Publishing Company, Cleveland, Ohio. Price, $3.50.

This is the second edition of this valuable handbook of Lake Superior iron mining and the ore trade which centers in Cleveland. The authors, a well known firm of chemists and metallurgists, have had all the maps in the first edition redrawn and brought up to date, a good many changes having taken place since the first book appeared, particularly on the Mesaba range. Late descriptions are given of the various mines and their equipment, with names of managers, superintendents and sales agents. There are tables of shipments of ore from the different ranges from the beginning and also data as to upper lake shipping docks and the unloading docks of Lake Erie. A chapter on "Beneficiation of Ores," contains details of the various concentration plants in the Lake Superior region. In another chapter the most commonly used methods of iron-ore analysis are described.

Safety in Grinding Machinery

Grinding and polishing machinery was discussed at the second annual conference on industrial welfare and efficiency at Harrisburg, Pa., by Charles G. Smith, president and general manager Pittsburgh Emery Wheel Company. The conference was called by the Department of Labor and Industry of Pennsylvania with the co-operation of the Engineers' Society of Pennsylvania and meetings for the presentation of papers were scheduled for November 17, 18 and 19, with an exhibit devoted to safety, sanitation, welfare and efficiency held from Monday to Saturday. From Mr. Smith's paper the following notes have been taken:

About fifteen years ago the taper on the sides of these tapered wheels was ½-in. to the foot on each side of the wheel and the flanges were made of grey iron castings but when it was learned that about 30 per cent. higher speed than was commonly understood and recognized as a reasonably safe speed for emery wheels would give so much greater and more economical production, there were several instances where the flange has broken. We then, about ten years ago, changed this taper to ¾ in. to the foot on each side and increased the thickness of these flanges. Since then there have been practically no serious accidents. Nearly all accidents that have happened were because flanges were too small in diameter, leaving too much of the wheel exposed beyond the rim of the flanges.

Very recently there has been a strong movement demanding the removal of the dust from all grinding and polishing machines and there are now some manufacturers working on designs of devices for taking care of this feature in addition to the aforementioned features and there are already some machines on the market with all these provisions.

The National Association of Abrasive Wheel Manufacturers has a safety committee. This committee proposes to submit standards to the commissioners of labor of the various manufacturing states, insurance companies, various trades bodies, such as the National Metal Trades Association, National Association of Manufacturers, etc., as well as to the users of grinding and polishing machinery in an effort to get co-operation along these standards. In the enforcement of any law along the use of safety devices with grinding wheels we must always recognize there are certain operations that will prohibit the use of any protecting device and it will be impossible to make the application apply to every case. There are many special cases and in these the machine should be kept in good repair to minimize the liability of accidents and judgment should be used in such cases.

Exports of steam locomotives from Germany in 1912 were valued at £1,857,500 and in 1913 at £2,712,100, while from the United Kingdom in 1912 they had a valuation of £2,137,000 and in 1913 of £2,781,911.

MINNESOTA IRON-ORE TAX

Assessed Value Nearly $279,000,000 — Cuyuna Range Now Included

Secretary Rukard Hurd of the Minnesota Tax Commission has prepared a statement on the equalization of the 1914 iron-ore assessment in that State, from which the following is taken:

The equalization of the assessment for 1914 of the iron-ore tonnages and mineral lands in the Mesaba and Vermilion ranges in St. Louis, Itasca and Lake counties and the Cuyuna range in Crow Wing county have been completed. The total tonnage of merchantable ore in the Mesaba and Vermilion ranges is put at 1,407,218,914 tons, which includes 9,308,432 tons in stockpile on May 1, 1914. The assessed valuation of the total tonnage and the mineral lands is $270,603,874. The tax commission is of the opinion that the iron ores of the Mesaba and Vermilion ranges are now on a basis of 50 per cent. of true and full value, in compliance with the new basis of valuation tax law effective May 1, 1914.

The iron-ore tonnages of the Cuyuna range having been measured and calculated by the mining engineer to the tax commission, and the grade and class determined, the tax commission for the first time made an ad valorem assessment thereon of 50 per cent. of the present indicated full value. The assessment is placed upon 13 active mines, or those about to become mines, containing 30,356,975 tons; on 19 properties of reserve ore of the first class, containing 27,066,558 tons; on 15 properties of reserve ore of the second class (lower grade), containing 13,434,332 tons; on 35 properties, containing 13,907,949 tons of low grade, non-merchantable, or non-minable iron; and also manganiferous "ore material," arbitrary values amounting to a total of $65,250, and regarded as upon mineral lands. The assessed valuation of total Cuyuna merchantable iron ore, 71,085,440 tons, including 227,575 tons in stockpile, and the mineral lands amounts to $6,033,085. Long exhaustion periods are taken to discount the future value of reserve ore. No commercial manganese ore has been developed on the Cuyuna range. There is a considerable quantity of manganese, but so mixed with this iron formation as to make it a manganiferous "iron-ore material" of no present metallurgical value.

The total assessed values of all ores on the Mesaba, Vermilion and Cuyuna ranges (including stockpiles and mineral lands), 1,478,284,354 tons, is put at $278,988,650, making the full value, on the 50 per cent. basis, $557,977,300. This full value is more than 60 per cent. of the entire taxable value of the State in 1906 before the creation of the tax commission in 1907; it is approximately 50 per cent. of the entire taxable value of the State in 1911. It is far greater than the value of all railroad property in the State.

The State of Minnesota, for State purposes alone, and exclusive of county and local taxes, has received in taxes from the iron ore and mineral lands above noted as follows:

1906	$179,272	1911	$919,643
1907	671,489	1912	933,193
1908	604,264	1913	1,317,220
1909	576,174	1914	1,325,196
1910	609,984		
		Total	$7,136,435

This includes taxes on stockpiles of approximately 5,000,000 tons per annum and assessed at approximately $1,250,000 per annum, 1907-1913, inclusive, and as stated for 1914, with a 4.75 mills State tax for this year. From the total shipments, 1906-1914, amounting to 251,642,064 tons, the State has also received in taxes over $7,500,000 included in the gross earnings tax paid by railroads.

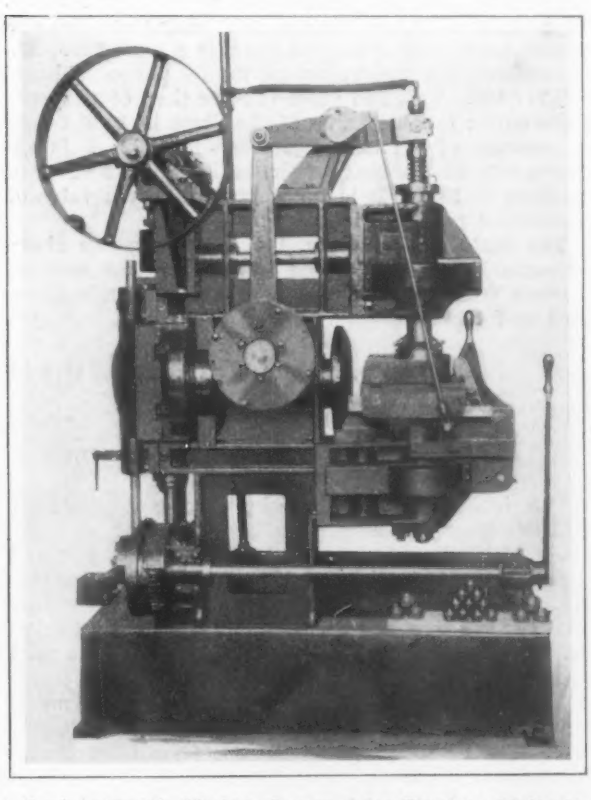
Since 1907 the tax commission has handled, measured, grouped, classified and assessed over 1,700,000,000 tons of merchantable iron ore. Of all the States and nations, Minnesota alone has positive, definite and intelligent understanding of the amount, grade and value of the developed iron ore.

A Semi-Automatic Machine for Unions

For the machining of malleable-iron lip union heads and tails the Pottstown Machine Company, Pottstown, Pa., has brought out a semi-automatic manufacturing machine. The machine is built in combination with any number of units up to a maximum of four on one base to suit the requirements of the purchaser, the object sought in the design being to keep the operator busy. The special feature of the machine is the chucking of the fittings in a vertical position. This arrangement is said to enable the tools to be operated at the maximum speed and at the same time ample lubrication is provided.

In operation the fitting is clamped in the chuck and machine started by the controlling lever at the front. The fitting is then faced, undercut and tapped automatically, and when the cycle of operations is completed the machine stops. The chuck is then drawn back to clear all the tools, the fitting dropping down through the rear of the chuck into a receptacle provided. While the chuck is withdrawn, the next blank is placed between the jaws and the chuck is pushed against a back stop, which grips the fitting and brings it into alignment with the spindles. The use of the controlling lever at the front of the machine on the left side makes it possible to stop the tools at any point in the cycle and return them to the starting point, or if the tools should break the machine can be brought to a stop at once, which, it is pointed out, saves the further breaking of the tools that would result if the machine were permitted to pass through the entire cycle before stopping. In this way the setting of the tools and the gauging is simplified to a great extent.

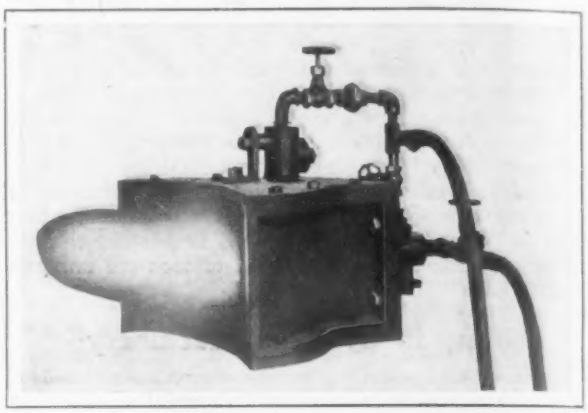
The chucking of the fittings in a vertical position enables the lubricant to be supplied through the hollow upper spindle by a pump and the necessary piping to give an ample supply to the tools. It is emphasized that this arrangement also enables the tools to be operated at the maximum speed, as they are kept free of any frictional head. In operation, the machine has finished a ¾-in. union tail in 20 sec. and has taken but 10 sec. longer for a 1¼-in. tail.



A Semi-Automatic Machine Designed for Finishing Malleable-Iron Lip Union Heads and Tails

A Portable Sectional Heater for Tires

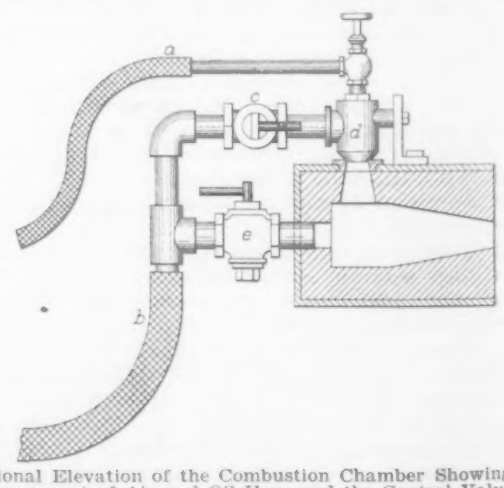
A tire heater which is not only portable but also capable of adjustment to suit various sizes of work has been developed by the Monarch Engineering & Mfg. Company, 1206 American Building, Baltimore, Md. The fuel employed is kerosene, naphtha, crude or fuel oil, or natural or illuminating gas, combined with air. The heaters are made in sections, six or eight being required, according to the diameter of the tire. They are intended for use in railroad shops, for both truck and engine work, and also in blacksmith shops for carriage and wagon tires.



A Recently Developed Portable Tire Heater Which Is Made in Sections for Adjustment for Different Diameters of Tires

The heaters are of heavy construction and the flame is surrounded by a fireclay muffle. It is possible to adjust the heater for any diameter of tire from 2½ to 10 ft. The distribution of heat is even and uniform, and special emphasis is laid on the fact that the use of the heater is not hard on the men employed for doing the work.

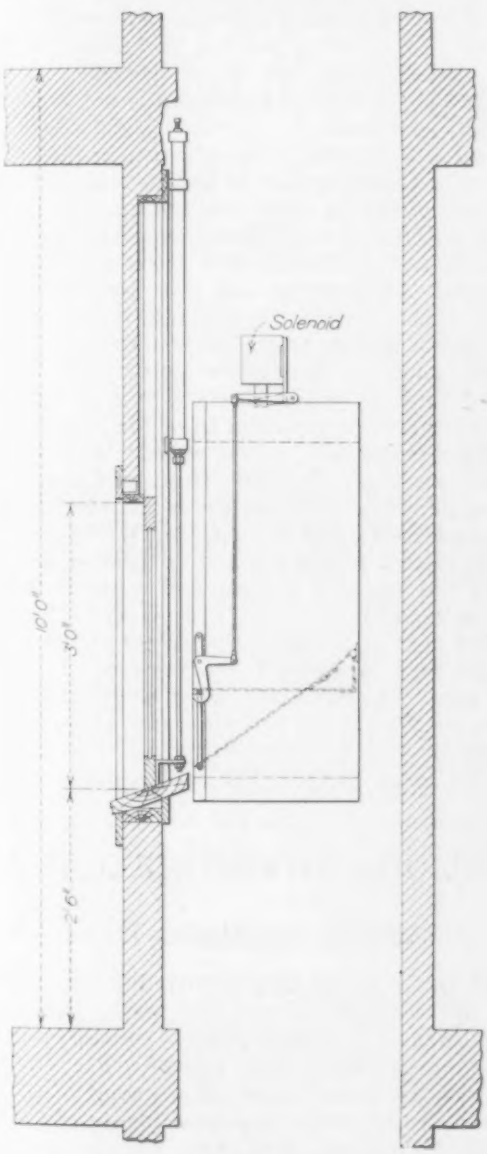
Metallic flexible hose is used for conveying the fuel and the air required to support combustion to the heater and, it is pointed out, that the use of flexible hose enables units to be removed or added to the heater easily. The arrangement of the combustion chamber and the supply lines with the various valves is shown in the accompanying drawing. The oil or other fuel is conducted through the hose *a* and the air, which is utilized at a pressure of not over 16 oz., is conducted through the hose *b*. The stop cock *c* admits air into the mixer *d* to atomize the oil, while the supply of air required to complete combustion is controlled by the stop cock *e*.



Sectional Elevation of the Combustion Chamber Showing Arrangement of Air and Oil Hose and the Control Valves

An Automatic Dumbwaiter Which Discharges Its Own Load

A dumbwaiter of an interesting type has been installed by the Burdett-Rowntree Mfg. Company, New York City, at the plant of the B. F. Goodrich Company, Akron, Ohio. It is designed to carry books, files, etc., from any one to any other of five floors and automatically dumps the contents of the car into such receptacle or slide provided for them. Automatic push button control is used to call the dumbwaiter to a floor and to dispatch it after loading. When it arrives at its destination, the horizontal floor of the dumbwaiter is lifted to an inclined position so that what is in the car will slide off.



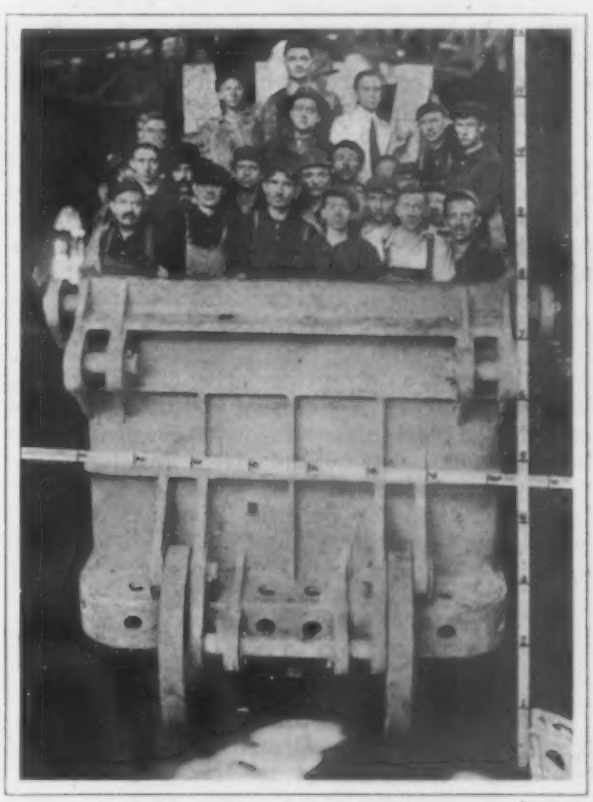
Sectional Elevation of a Portion of a Shaft in Which an Automatic Electric Dumbwaiter with Push Button Control Operates

The buttons have electrical connections to prevent conflicting movements of the dumbwaiter. The equipment furnished at each floor consists of a set of seven push buttons, four of which are used for dispatching the car, one for calling it to that particular floor and the other two for opening and closing the door through the medium of a compressed air cylinder.

When the car is called to a floor by depressing the push button, it will come to a stop at the desired floor and the door automatically opens. It remains so while the car is being loaded and is closed by pushing the door closing button to operate a pneumatic cylinder. The car is then dispatched to its destination by pressing the proper button. If, however, something has been omitted from the load, the door can be opened by pressing another button. When the door has opened to its fullest extent, at the point of destination, the load is automatically discharged, as stated, in a receptacle outside the door, which has an arrangement to prevent whatever is being carried from being too badly shaken up. The dumping of the car is controlled by a solenoid located at the top of the car. This releases a double hinged shelf or bottom in such a manner that, as shown by the drawing, the shelf drops into the inclined position. The car has a travel of 50 ft. and a speed of 150 ft. per min.

Large Manganese Steel Dredge Dippers

What are believed to be the largest manganese steel dippers ever made were recently supplied by the Edgar Allen American Manganese Steel Company, Chicago, Ill., to the Bucyrus Company. The



A Dredge Dipper Having a Capacity of 10 Cu. Yd. The Dipper Is a Manganese Steel Casting Weighing Approximately 37,600 Lb.

dippers, known as the Missabe type, have a capacity of 10 cu. yd. and weigh approximately 37,600 lb. each. They were purchased by the Government for use on the Panama Canal dredges. The accompanying illustration shows 23 men in one of them.

Comparatively few rivets were employed. With the exception of the bolts, nuts and rivets, the dippers are of manganese steel construction throughout, the body consisting of but two pieces, the front and back castings. The lap-joints at the sides tend to make the dipper very rigid.

The over-all measurements of the dipper are 9 x 9 x 10½ ft. The lips are 3¼ in. thick and the fronts are the same thickness underneath the teeth. Between the teeth the fronts are 1½ in. in thickness and 3¼ in. thick at the bottom band. The backs are 1¼ in. thick at the sides and 3¼ in. thick at the bottom bands.

National Founders' Association Meeting

Framing Legislation, Getting Evidence Before the Industrial Relations Commission, and the Clayton Bill Delusion Discussed at Last Week's Meeting

To help frame laws rather than to fight what others have framed was what the National Founders' Association meeting last week in New York City urged on employers' associations. Some reassuring examples of what had been accomplished in this way in the case of State workmen's compensation measures were explained, and encouraging results were shown in getting evidence of employers before the Federal Commission on Industrial Relations. In the developments which have taken place since the meeting a year ago, in securing a union of efforts among a number of associations to espouse the employer's side of this last question, there was evidenced a spirit of congratulation. It is believed that these employers' associations have found a common ground for activity which should continue to serve in similar constructive work in the future. As a whole, the meeting was decidedly optimistic as compared with the last meeting. While much of the expected legislation referred to at length a year ago has become law, much of the radicalism was eliminated, though, as in the case of the Clayton bill, trouble is still possible, as explained later on in the report of one of the addresses, through the delusion which the labor side has suffered.

Briefly described, the important features of the meeting were as follows: An address by Walter Drew, counsel of the National Erectors' Association, describing how, as a representative of his own, the National Founders' Association and others, he had succeeded in getting the employers' case before the Federal Commission on Industrial Relations. An address by James A. Emery, counsel for the National Council for Industrial Defense, who explained how unnecessary the Clayton bill is as regards its labor measures, but who suggested how the employees may wrongly vent their indignation when the way they have been duped is discovered. Addresses were made by George F. Monaghan, counsel for the National Founders' Association, and by C. A. Chase, president of the New York Manufacturers' Association, both of whom had much to say of the necessity of framing legislation. Marshall Cushing, Washington correspondent of the association, delivered an address which substantiated this necessity in pointing out the undoubted fact that such successes as the labor leaders may have achieved in the way of legislation is not in any way to check demands for further legislation. Maj. Edward J. Boughton, judge advocate of the military district of Colorado, told at the association banquet the story of the Colorado coal strikes. M. W. Alexander, as chairman of the association's committee on safety and sanitation, was also among those who addressed the meeting and was not the least in giving distinction to the meeting, bringing before it the latest devices which the committee is perfecting for the safety and sanitation of workshops and presenting them in the dramatic way by which Mr. Alexander regularly carries home his lessons.

The meeting was well attended; in fact, it was particularly gratifying from this standpoint, and in the subjoined account are given the leading points of the addresses and discussions. William H. Barr was re-elected president, and in placing his name before the meeting sincere and eloquent tributes were paid to his capacity, such as to indicate that his first year as the executive officer of the association has been far beyond even the expectations of a year ago. The meetings were held in the Hotel Astor, on Wednesday morning and afternoon, November 18, and Thursday afternoon, November 19, with the usual banquet Wednesday night.

Evidence in Industrial Relations Investigation

The contributions to the meeting on the investigations of the Federal Commission on Industrial Relations, were a report by Henry B. Sargent, Sargent & Co., New Haven, Conn., as a representative of the joint committee of associated employers, made at the Wednesday morning session, and an address by Mr. Drew at the Wednesday afternoon session. Mr. Sargent briefly explained how the industrial relations committee was constituted in 1912 to report within three years and provided by Congress in June, 1913, with $100,000. He emphasized that the testimony by labor organizations has been strong and received with favor, and that an active campaign was needed to get the truth from the employers before the commission. The result was that in June, 1914, a joint committee was formed from the National Founders' Association, the National Metal Trades Association, the National Erectors' Association, the National Association of Manufacturers, and the Counsel for Industrial Defense. It was finally arranged that Mr. Drew, with the assistance of James Macintyre, be engaged to go with the commission from city to city and arrange for getting the testimony of employers.

Address by Walter Drew

Mr. Drew. by the way of introduction, reviewed how the Federal commission came into being. There was a general public condemnation of unions on the McNamara exposé. The direct result was the formulation of a group of reforms through the activities of Jane Addams, of Chicago, and Rabbi Wise of New York, who, believing the NcNamara case must be the result of much oppression, petitioned that the President of the United States appoint a committee to investigate the structural steel industry. The act by which the commission is constituted does not, of course, make any mention specificially of structural workers. Back of it, he said, were all organized labor, reformers and socialists, who have acted as though they should investigate the subject from a partisan standpoint. He felt that there was no question that this was the hope of organized labor. President Taft's appointments to the commission failed, but President Wilson's appointments would not tend to discourage organized labor.

He felt that the employers needed to avail themselves of the forum offered by the commis-

sion; that if one must be in court, he ought to be there forcibly. He gave president Barr much credit for emphasizing this view and bringing about the joint action of employers represented. Active participation began in Chicago and the complexion of the public hearings changed instantly. Witnesses were called, and while they were heckled, they put into the records strong facts on underlying principles of the employers' case. The commission met later in Seattle, Portland, San Francisco and Los Angeles, and Mr. Drew feels that at present the employers have a strong case, as they gave the results of closed shop conditions in actual operation. They showed that the most progressive shops both in high wages and high production were open shops. It was brought out in San Francisco that the bricklayers' union secured a levy of ½ per cent. of the contract price on all buildings using brick; in other words, the contractor pays the ½ per cent. into the union and must get the receipt under penalty of a strike.

Mr. Drew paid a tribute to Prof. John R. Commons, of the University of Wisconsin, who is utilizing the commission in the interest of constructive work in behalf of industry. It is understood that the commission has voted to do nothing without preliminary endorsement of the labor union and the employer, and the Wisconsin idea of industrial self government is suggested, involving, for example, an employment office, by a committee of employers and employees, with the minimum wage question settled in the same way. Mr. Drew said that if the commission secures the preliminary endorsement of both sides, it will have no opposition to its proposals and will accomplish something no other commission has ever done. Mr. Drew appeared not to expect any radical report from the commission, and that even if hoped for things are not attained, the associations involved in the co-operative movement have the advantage of learning to work together, as they have for five months, and are in a better position to fight, if necessary, than even before. The final report of the commission, he explained, is due in August, 1915.

Participation in the Framing of Laws

While one of the notes sounded throughout the different sessions of the meeting was the necessity of employers' participating more than has ever been the case in the framing of legislation, from the early inception of its likelihood, the leading contribution of the meeting in this regard was the address by Mr. Monaghan, delivered at the Wednesday afternoon session. In a less direct way the same question was brought out by the address of Mr. Chase, who, while devoting himself to the New York State workmen's compensation law, sounded a warning as to what other states must look out for in the event that legislation is attempted with the New York law as a basis. Mr. Cushing's contribution also had a bearing on the subject, and while Mr. Chase's address was made at the Thursday morning session and Mr. Cushing's at the Wednesday morning session, abstracts of these two addresses have been arranged to follow the subjoined report of Mr. Monaghan's remarks. What Mr. Monaghan had to say was in effect as follows:

Address by George F. Monaghan

Time for conservative action is past. The manufacturer must take a part in framing the issue in the beginning. Many laws which have been passed have been good, such as wage payments in cash, laws affecting child employment and laws concerning the employment of women, but such laws as the minimum wage law ignore matters of supply and demand, financial depressions, etc. If the opportunity by constitutional changes is allowed, this kind of laws will go through rapidly. Compensation laws as a whole, he said, have proved efficacious both to employer and employee, but there is a tendency to go beyond the present acts. Reformers say we should establish systems such as exist in Germany, where paternalism flourishes; that all men should be insured against sickness, old age, and unemployment. At present this is impossible, but there is a tendency to modify the constitution. There is a tendency among the public that the employee should not be expected to stand a share in the expense.

In the event of unemployment insurance, a premium would be put upon laziness. To emphasize the present tendency, he mentioned one measure at present proposed by the Federal industrial relations commission relative to the establishment of an employment bureau. The average man, he said, pronounces it a good thing. He felt that it was designed to create a bureau under authority at Washington, with districts all over the United States, calculated to give the secretary of labor jurisdiction over every large plant in the country and over every employers' association. It would co-operate with similar state employment bureaus. All the records of one's association and his establishment would be open for inspection. This is one of the measures, he asserted, that would help to conserve the closed shop.

Another one of the contemplated changes provides for the initiative, referendum and the recall. Employers misinformed, he admitted, will be found in favor publicly of the referendum. He recalled the fact that at the last election in Ohio, in the case of 41 constitutional changes voted on, less than 25 per cent. of the electorate participated, or between 200,000 and 300,000, against over 1,150,000 votes polled for a later election for officials. According to this experience, important questions are determined by 25 per cent. of the voting public. In all the demands that are made by reformers, he has yet to hear of a single voice raised in favor of the independent workman. They failed to remember that of the 30,000,000 workers in gainful occupations, only 2,000,000 are identified with union labor.

KEEP NO LONGER OUT OF POLITICS

If the manufacturer is to accomplish something substantial, he must go farther than to educate. In general, in the past, employers have become interested when a measure was about to be voted. The representative of the association has appeared before committees, and representatives have been written to. My thought has been that the employer was safer out of politics, as it might be a detriment to his business. I have come to the conclusion that a radical change must be made. We must take a page from the history of the American Federation of Labor and assist in legislation and put the right caliber of men in office. As a matter of fact, the employer by intelligent action, which does not comprehend coercion, has control of numbers of votes. Most effective work is to be done, not when voting is about to take place, but early in the framing of the issue.

Address by C. A. Chase

The New York State law is the most radical compensation law in the United States, and I have heard it said in the world. The manufacturers of this State recognize that workmen's compensation has come to stay, and rightfully so, if the interests of all parties are given due consideration. The employer is just awakening to the situation and there is going to be a great work to do if we protect not only our rights, but also the best interest of the public.

Let me warn you not to leave for someone else what you should do for yourself, but join with your neighbors and become active to make your influence felt. Take a hand in framing the laws under which you must live.

The employer is liable for the compensation in every accident, regardless of the cause, unless it can be proved that the accident was solely due to the intoxication of the employee, or that he wilfully caused the accident. You will appreciate that the chances of proving that an accident was solely due to neither one of these causes is very remote, so that it practically means that compensation must be paid regardless of the cause of the accident.

The law provides for a two weeks' waiting period before compensation begins to apply, which is perhaps the only saving clause we have in the law. For 60 days, the employer must furnish all medical, surgical and hospital treatment that is required, *or requested*, by the employee, but the commission can pass on the reasonableness of such requests. Many manufacturers believe there should be some limit to this expense, so that an employer may not be imposed upon. Some States specify an amount, from $50 to $250.

A PREMIUM ON THE SHIFTLESS

If a man has worked substantially a year, his earnings for the year are divided by the days he has worked, multiplied by 300 and divided by 52. In other words, his wages are based on 300 work days or full time. If the man has not worked substantially a year, his wages shall be based on an employee of the same class who has done so. If neither of the foregoing are reasonable and fair, then his wages shall be what will reasonably represent his earning capacity in his employment, having regard for what he has earned and what others have earned in the same or similar employment in the same or neighboring locality. With a minor, consideration must be given to the increase he might be expected to earn later in life.

When in such times as these, many of us are running less than 6 days a week, so as to distribute our payrolls among more of our old men; if a man is injured, he must be compensated on the basis of what he would have earned if we were running on full time. In short, it puts a premium on the man who has been shiftless, and an extra load upon the employer who is really trying to help his men. So far, I do not know that our commission has been unfair in this matter, but the law, as worded, gives a great opportunity for the employer to be imposed upon.

ALLOWANCES TOO HIGH

The percentage of wages upon which compensation is figured is 66 2/3 per cent. Most states have made this 50 per cent., which is as high as it should be. When too great a percentage is paid, it tends towards malingering. The percentage becomes most serious when you consider the limits, if any, that are applied thereto under the New York law.

For total permanent disability, the limit of time is the life of the injured man, whereas in most States, the limit runs between 5 and 10 years, with the maximum amount of $3,000 to $5,000. For temporary total disability, we have a limit of $3,500. In the case of partial permanent disability, our payments extend over more weeks than any other state; for instance, compare with Ohio, which represents a fair average of what the other States have done:

	New York	Ohio
Loss of hand	244 weeks	150 weeks
Loss of arm	312 weeks	200 weeks
Loss of foot	205 weeks	125 weeks
Loss of leg	288 weeks	175 weeks
Loss of eye	128 weeks	100 weeks

Our maximum for a weekly benefit is $15 and in a few cases $20, whereas most states run between $10 and $12 per week.

In case of death from injury, the law calls for funeral expenses, not to exceed $100. To the widow, 30 per cent. of her husband's wages for life, unless she marries, in which event she receives two years' allowance in a lump sum, as a sort of wedding present. Each child, under 18 years of age, receives a percentage of the wages, but in no event shall the total amount to over two-thirds of the man's wages. If there is no widow or children, or they do not get all of the 66 2/3 per cent., then dependent grandchildren and brothers and sisters come in, and after them dependent parents and grandparents. The chance, therefore, of saving much of the 66 2/3 is rather remote.

In most states, there is a limit on the amount for the death claim, either in the total amount or in the number of years for which the compensation has to be paid. The usual time limit is from four to six years. Ohio makes the time limit of six years, and also a total limit of $3,750.

Aliens, not residents of the United States, receive the same compensation as residents. Some feel that this is unfair, since many of these men come to this country to get as much money as they can, and then take it back home with them.

At present the law allows one year within which to file a claim. This is too long and should be reduced one-half or more.

The state fund must accept any risk that is offered and you will at once see that they would get the poor risks, and the good risks in the fund would have to help carry them. The commission can fix the rate in the state fund, whereas the stock and mutual companies must submit their rates to the insurance department of the state and first secure their approval of the same. If it is necessary for those companies, who employ the best actuaries that money can secure, to submit their rates for approval, then the same rule should apply to the state insurance rates.

THE HANDICAP ON MARRIED MEN

With a view of relieving the handicap on the married men with families, it has been suggested that the law should be changed so that the number of children would not be so great a factor and that some of the relatives who now come under the head of dependents should be omitted. Along the same line, a great deal has been said and printed about the unfair employer who made his workmen submit to a physical examination, claiming that he can insure old and physically defective men just as cheaply as sound healthy men. It is not necessary for me to go into details with you, gentlemen, to show you that this is not true. We would be doing an injustice to our men, if we placed a defective man in a position where he might injure himself or be liable to cause any injury to one of his fellow-workmen.

Another difficulty that is causing the workman to complain is the present delay in passing on claims. It is said that 300 claims per day are being filed with the commission and they are passing on about one-half that number. How long can this keep up before they will be hopelessly behind, and cause endless confusion and serious suffering to the claimants?

As manufacturers, we have claimed from the start that we should be allowed to deal with our own workmen. This would enable us to give prompt attention to every case and tend toward better feeling between employer and employee. Any law that injects a third party between those two great factors in the country's welfare is a step backward in the world's progress. We do not object to submitting our settlements to the commission for their final approval, but we most emphatically protest at being prohibited from looking after the welfare and best interest of our workmen.

Address by Marshall Cushing

If the labor sections of the Clayton act mean little, it is as certain as the sunrise that organized labor will go in for more at the first opportunity, perhaps by trying to load riders on the appropriation bills at the approaching short session; perhaps by resuscitating the old Pearre bill in some form, preferably its old form, since nothing could be more radical or dangerous than that.

If personal appeals and arguments and appeals by letter and telegram have become less and less effective with senators and representatives, it follows that the only means of establishing the truth and making it all-powerful against these falsities is by a process of political education made universal. Almost everywhere

except in the business world this was accepted long ago as the only effective means by which the right can be made to prevail ultimately.

THE YEAR'S FEDERAL LABOR LEGISLATION

Two or three members introduced bills to prevent the transportation of so-called strike-breakers from one State to another; another to provide a minimum wage for certain employees of the United States—laborers, helpers and others; another would establish a commission to which any individual worker, having a grievance, real or fancied, against his employer, might appeal with confidence that the case would be looked into promptly. Another wanted a bureau of labor safety in the department of labor, which might be well except that the control of a secretary of union labor would be over it all. There were a number of bills providing for conciliation, mediation and arbitration between employers and employees; hardly any statesman can leave that phase of the subject alone. Two men, Deitrick, of Massachusetts, in the house, and Borah, of Idaho, in the senate—the latter, if not the former, suspected of having presidential ambitions—introduced the so-called stop-watch bill, to stop the use of the stop-watch in efficiency work under a penalty of a $500 fine or six months in jail for any employer who does it or tries it.

ALL BUSINESS MUST BE UNITED FOR DEFENSE

The President was reported, when offering his so-called truce to the coal operators of Colorado, to have said that it was the patriotic duty of the mine operators to accept his proposition. On the contrary, it was their patriotic duty to reject it, and this they have done, greatly to their credit. Yet here are publications declaring that since a corporation which fails to meet its obligations to its bondholders can be put in receiver's hands, therefore the coal mines of Colorado, not meeting their obligations to the public, ought similarly to be turned over to the management of the courts! What obligations to the public? There is none, except to obey and defend the law; and the employer frequently enough has done this when his own self-interest could not help but suffer, to entitle him to the backing and the praise of public officers, rather than their abandonment for cheap political reasons or any other reasons.

It has been noticed by a few, perhaps by many, that, living as we do under a government by agitation, each agitation, like every agitator, has helped every other agitation and every other agitator. It is clear enough that each agitator, having nothing to lose and everything to gain by co-operating with every other agitator, does that very thing all that he can. Hence the community of interest among the isms. What does this involve as a necessary course of action among the opponents of the agitators? Necessarily, a community of action among those opponents. No matter how strong a section of the opposition may be, it requires the help of every other section; it cannot get along without this. Members of the National Founders' Association, members of other open-shop organizations, contend for their own clear right to continue doing business in a profitable manner, or in a fairly profitable manner most of the time and it would do nobody any good to do business. any other way; in fact, it would not be doing business.

There are railroad presidents and bankers, no doubt, who wish that the stockholders in the corporations of which they are in reality trustees would organize to defend their own, their little holdings or their big holdings, in these corporations. Some of them have even suggested that this be done. But they themselves do nothing effective about it. There are great industrial concerns whose leaders feel that they and the institutions, and really they are institutions, of which they are the head, are far too big and strong to be bothered by the troubles of the average man. They could hardly make a more serious mistake. Their indifference to what is really going on around them, their somnolence in the face of the socialistic advance, is utterly appalling. Possibly they make the excuse that they are afraid to do anything—that the more they tried, first, to set themselves right before the public and then to win the public over to the side of business, the more surely a contrary effect would be had. That is one of the blunders in the class of political and social crimes. If they are right in principle and correct in method, which they ought to be and had better be, then they can prove it easily.

The Discussion

Quite a discussion followed the presentation of Mr. Chase's paper. George M. Gillette, Minneapolis Steel & Machinery Company, Minneapolis, Minn., called attention to the fact that new compensation measures and existing compensation measures will have amendments applied to them, if it is possible to do so, to bring them to include radical stipulations like the New York law, to which legislators will be asked to turn as more or less of a model. The Minnesota law, he said, was operating very satisfactorily, but now amendments are being considered. He is an advocate of a plant's carrying its own risk if it is a large enough employer to cover the law of averages. His cost per employee is 61c. per year, with better medical attendance than is obtainable under the state law. He does not favor state insurance, or any more paternalism than necessary. The state plan provides for building up a strong political machine and nothing invites fraud so much as workmen's compensation operations. Instead of a state board, he favored the New Jersey arrangement, which puts the operations of the workmen's compensation laws in the hands of the courts. He advocated a joint commission to help in framing laws.

M. W. Alexander, General Electric Company, characterized the New York law as one of the worst in the United States, partly because it was made to serve a political purpose. He had heard about 2½ months ago that it was 30,000 claims behind and these were piling up day by day. He emphasized particularly that there was a lack of proper incentive to accident prevention and that it was a waste of gunpowder to concentrate on the reduction of compensation from 66 2/3 per cent. to any other amount, such as 50 per cent., and not secure the incentive for accident prevention or proper medical and surgical attendance to the employee, which the employee shall be obliged to accept and which the employer shall be permitted to provide as long as he sees fit. He joined in urging employers not to wait until laws are proposed and then to fight, as then they appear as opposing the legislation.

D. K. Bartlett, Builders' Iron Foundry, Providence, R. I., told how by getting manufacturers together in advance on a workmen's compensation measure and securing an agreement among the manufacturers, the manufacturers' committee was able in the case of Rhode Island to favor a definite bill which had been proposed, and this, with little modification, was voted by the legislature.

Safety Devices for the Foundry

Mr. Alexander's address on safety in the foundry and apparatus and appliances for preventing accidents and treating the injured covered in part the description of means and methods explained by him before the American Foundrymen's Association in September, in Chicago. Since then, however, he has developed a hood for the electrical welder and an all-metal and therefore washable stretcher for the injured. Up to the time of his address, a corner of the room had been screened off, and this was found to hide for the time being an exhibit of the safety devices and equipment, by means of which he was able to give demonstrations. In this he was ably assisted by President Barr, who was impressed into service when it came to show how an injured man could be cared for on the stretcher, awaiting surgical attention.

He described the congress type of foundry shoe,

(*Continued on page* 1260)

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Wanted—A Model Compensation Bill

National employers' associations might well give themselves another task, in the shaping of workmen's compensation laws. It was shown at the National Founders' Association meeting last week that preliminary agreement among employers on essentials resulted in the speedy passage in one State of a bill satisfactory in all important details. It was brought out at the same meeting that several important employers' organizations have learned to work together on a matter that has a bearing on possible Federal legislation—the question of relations between employer and employee. The idea of co-operation in shaping legislation has been worked by numerous organizations to such an extent that it should arouse no prejudice in the legislative mind. Labor unions are highly adept in using it.

National agreement becomes important since legislation in one State is likely to be copied from that in other States which have taken the initial steps. If radical views have won out in the beginning because of a lack of concerted opposition, they are pretty sure to reappear in the acts of sister States. As things are, legislatures are approached with suggestions from social uplifters, well meaning and otherwise. The suggestions represent carefully planned campaigns. Similar unanimity is rarely shown by those in touch with the practical and financial sides of the question.

The National Founders' Association, to take it for illustration, has working arrangements in the propaganda of workshop safety and sanitation with other associations, all together having upward of 6,000,000 employees on their rolls. It is reasonable to assume that a joint committee from these associations could agree on an equitable basis for workmen's compensation. If some such model law were drawn up, it is hard to believe it would not have weight. The embarrassing situation now is that instead of having a voice in framing any legislation, employers' representatives are put on the defensive when they seek to have reasonable modifications, in spite of the practically universal recognition of the compensation principle.

The proposal that employers draft a model compensation measure will of course avail little if not undertaken early. Amendments are under consideration in States which have been told, for example, that they are too far behind New York, notorious for its one-sided compensation law. Other States will mold laws from the same radical pattern. For the employers there is the advantage of experience under existing acts, as these have carried a more convincing lesson to the man who directly pays the bill than to one who pays only indirectly.

The call to employers to take an active part in public affairs was never so clear, and they have never had such an opportunity as the compensation question offers to appear in a constructive rôle rather than in the too familiar one of protest and defense.

Replacing Foreign Alloy Steels

One fact to which the war has directed the attention of domestic steel manufacturers is that alloy steels have been imported into this country to a greater extent than they have realized. The amount of inquiry that has come from manufacturers of automobile parts for alloy steels to take the place of those furnished heretofore by Krupp and other foreign works has led to a new appreciation of the possibilities in this direction. The pursuit of tonnage has been pushed so energetically that this special trade has had little attention from the larger producers, even from those who presumably have been aiming for some time to meet the demands of users whose specifications were particularly exacting. Naturally the electric furnace has been looked to for results in the alloy field, but some of the domestic works which have been successful with this trade have had excellent results from small open-hearth units. Plants devoted especially to such work have been very busy of late, and have been surprised at the number of directions from which inquiry has come since the cutting off of European supplies.

Manufacturers of forgings and springs, particularly for automobiles, have found the domestic alloy steels working so well through the meeting of the analyses of foreign steels to which they had been accustomed, that they consider themselves already past the point of any dependence on foreign supplies. And as home manufacturers go farther with this line of work they will be further fortified against efforts foreign makers will put forth to regain the business after the war.

In addition to chrome-vanadium steels, which have been given special prominence by the preference certain automobile manufacturers have shown for them, the alloy products which have figured in imports represent nickel, chrome-nickel, silico-manganese and chrome-silico-manganese steels which have gone into automobile axles, bearings, gears and other case-hardened parts, springs, etc. At the same time the cutting off of foreign supplies of

special steels has stimulated the laboratory work of metallurgists in the automobile industry who have contended that carbon steels under careful heat treatment are capable of as good service as certain well known alloy steel products. On the other hand a commercial argument that has proved effective with some users, in meeting the above claim, is that with carbon steels much closer limits of temperature must be observed in heat treatment to give assurance against injury to the steel.

No More Car Performance Statistics

The American Railway Association has decided to discontinue the gathering of statistics relating to car supply and car performance. The decision was reached at the fall meeting held in Chicago November 18 and is stated to be based upon the consideration of economy. The average business man is quite familiar with one division of these statistics, that relating to car surpluses and shortages. At first fortnightly, but during the past two years semi-monthly, a statement has been given out showing the gross surplus and gross shortage at all points, together with the net surplus or shortage as the case might be. These statistics have proved interesting and valuable, as furnishing a close gauge of the amount of freight business offered and therefore an excellent index to the general state of trade.

Of the activity now discontinued, however, the more important branch from the railroad standpoint was that relating to car performance. These statistics were compiled monthly and showed the car performance in detail, the average number of miles per day made by empty and loaded cars, the number of ton miles per car per day, etc., including even a computation of the average earnings per car per day.

Our understanding is that when this work was instituted, in 1907, the object was to measure the improvement the railroads expected to make in car movement, on the principle that the greater the car mileage and the heavier the loading the more economically the work of transporting freight would be conducted. In a strict sense, possibly, the gathering of the statistics would not be precisely an economy, but it would be at least a measure of the economy, and in any line of activity the practice of economy is certainly encouraged, and is usually greatly aided, by the keeping of an accurate record of what is being accomplished. When independent efforts are being made by a large number of interests, as in the case of the railroads, each one is necessarily stimulated by noting a composite record of what all have accomplished.

The discontinuance of this statistical work, therefore, cannot be lightly dismissed with a statement that the action is taken for the sake of economy. Without more adequate explanation than has been given one is inclined to conclude that its abandonment, after seven years of trial, is an indication that the railroads have not made much headway in the effort to increase car loading and car movement. In a general way the figures have shown practically no increase in the average daily car mileage, a slight increase in the car loading and a slight increase in the daily car earnings. The percentage of loaded mileage, in fact, has decreased slightly. If there are better reasons than appear on the surface for the discontinuance of these returns, the many friends of the railroads and those who have been enlightened from time to time as to general business conditions by the car surplus and shortage report would be glad to hear those reasons.

To the layman it has always seemed that great improvements, leading to much more economical operation, could be effected by increasing car loading and car movement. In the past few months the car movement has averaged about 23 miles per car per day, about 65 per cent. of this being loaded (a record not as good as that of a year or two ago), while the average loading of loaded cars has been about 27 tons. Both items, it would seem, should be susceptible of large increase.

Possible Revision of the Tariff

Advices from Washington are that members of the Ways and Means Committee and of the Senate Finance Committee are giving serious consideration to the advisability of extending the emergency war revenue act for one year from January 1, 1916, the date upon which it will automatically be repealed. Statisticians of the Department of Commerce, after a careful review of the industrial situation here and abroad as brought about by the European war, have reached the conclusion that the treasury must provide against a heavy loss in revenue from dutiable importations, not only during the period of the war but for a year or more thereafter; in fact, until the industries of the warring nations can be restored to a normal basis. The opinion is expressed that even should the war terminate early in the new year, of which there is no prospect, our customs revenues would show a substantial deficit for at least two years. It is further pointed out in this connection that under the terms of the Underwood-Simmons tariff act sugar, which is now paying 75 per cent. of the duties provided by the Payne-Aldrich law, will be placed on the free list May 1, 1916, thus entailing an annual loss of nearly $50,000,000 as compared with current collections. No provision whatever has been made to take care of this big deficit, the income tax law having fallen far short of the expectations of its framers and there being no reason whatever to assume that collections from this source will increase; on the contrary, the average income has been declining for more than a year and can hardly be expected to reach a normal basis until many months after the war ends.

A bill extending the life of the war revenue act would furnish a greatly desired opportunity for "riders" embracing sweeping changes in the tariff law. This fact emphasizes in the minds of administration leaders the necessity of securing the desired legislation at the coming session, for in the new Congress the few protection members of the majority who are interested in caring for the sugar, rice and stock-raising interests of the South might dominate the situation. While the outcome of the present agitation is uncertain, one important fact stands out clearly and that is that the European war has so emphasized the importance of maintaining and extending domestic industries that attempts to put through legislation affecting the revenues in any way will result in a general demand for a more or less comprehensive revision of the tariff.

CORRESPONDENCE

Technical Men and Management

To the Editor: Mr. Burman's letter in *The Iron Age* of November 5, headed "Germany's Trade Position Due to Technical Men," arouses thought, and when a letter does that it is a useful letter. There is always room for argument as to the practical and the impractical. President Harrison did a practical act for American trainmen when he urged Congress to pass the automatic coupler bill. Charles Dickens was a practical man when he wrote the "Christmas Carol" to pay his pressing debt; when he created Tiny Tim for old men to read to children.

The men whose knowledge of facts is merely incidental to strength of character and high purpose are the most useful men in trade or shops. Directors of companies do not weigh what a man knows, but they consider his completeness as a man for the work he has to do; and if a technical man is selected, the choice is for other and better reasons than his knowledge of undisputed facts. Men for heavy burdens need self-control and wisdom more than knowledge of scientific discoveries or mechanical improvements. There is no short cut to real success in building commerce or in building character. Permanency in a nation's trade or in individual success is supported by something greater than the facts of chemistry, of astronomy, or of mechanics. If a technical man fails as a salesman, his failure is not owing to his education or his training, but to the fact that he was not a salesman and could not love the work. If a technical man succeeds as a general manager his success is due more to his love of the work than to his knowledge of mathematics. A lawyer may fill the highest position in commerce or manufacturing, but his success is only incidentally through legal knowledge; and comes directly through judgment and his insight into human nature. Character is not made up of the material or the seen realities, but of struggles with disappointment and opposition, for out of tribulation grow faith, confidence and honor.

Facts alone cannot be trusted. Facts and science will drift man to all corners of the universe; from doubt to doubt and from error to error. They are good tools, but cannot teach man duty or take the place of faith. Man has discovered some of nature's laws. But all facts and all of man's discoveries are insufficient for his victory without the thumps of life's reverses, by which we learn that logic may be false; faith may be right; force may fail; kindness may succeed.

EDWIN S. JACKMAN.

Chicago, November 18, 1914.

Origin of Sherardizing Process

To the Editor: My attention has been called to the articles on the Sherardizing process which recently appeared in your paper. The author has evidently been misinformed as to the origin of the process. In the year 1900 I was making experiments on annealing cast iron, and among other substances used was zinc dust. On several occasions the articles appeared to be coated with zinc and on examination this was found to be the case.

Commander H. V. Simpson only became associated with the process when some time afterward a small company was formed to work the process. In 1905 I read a paper before the Society of Engineers entitled "Metallic Preservation and Ornamentation of Metallic Surfaces" which described the process in detail.

SHERARD COWPER-COLES.

Sudbury-on-Thames, England,
October 30, 1914.

The following have been appointed as the Merchant Marine Committee of the National Foreign Trade Council: W. L. Saunders, chairman, James A. Farrell, Robert Dollar, P. A. S. Franklin and James J. Hill.

Fabrication-in-Transit Refused

WASHINGTON, D. C., November 24, 1914.—In denying fabrication-in-transit to steel used in the manufacture of underframes for railroad cars, the Interstate Commerce Commission makes it clear that this will be allowed only in industries where it can be shown to be an actual necessity. The ruling will result in the rejection of numerous pending applications. The complainant, the Middletown Car Company, operates a plant at Middletown, Pa., 255 miles east of Pittsburgh. Under the tariff of the Pennsylvania Railroad Company iron and steel articles may be fabricated-in-transit when to be used in bridges, buildings, and tunnels at plants having direct track connection, the rates for the privilege being 2c. in addition to the through rate. Iron and steel in sixteen specified forms, including angles, bars, beams, etc., are embraced in the tariff. The complainant contends that the underframes of steel cars are fabricated from these articles under practically the same methods as are used in fabricating structural steel for bridges and buildings, and the materials in all cases are obtained from the Pittsburgh steel territory. It alleges that while the through rate from Pittsburgh to Curtis Bay, Md., for example, is only 14½c. per 100 lb., the sum of the rates from Pittsburgh to Middletown and from Middletown to Curtis Bay is 24c., so that car frames intended for delivery at Curtis Bay must stand the charge of 9½c. for fabrication at Middletown, while if the materials were intended for bridges or buildings the fabrication rate would be but 2c. The Standard Car Company, a competitor, located at Butler, Pa., enjoys a rate of 3c. from Pittsburgh to Butler and of 14½c. on the fabricated articles from Butler to Curtis Bay, or a total of 17½c.

In denying this petition the commission says that structural iron and steel used for bridges and buildings is of necessity fabricated at mills far removed from the location of the bridge or building, and it is essentially inexpedient to set up the necessary machinery for such fabrication at the location of the bridge or building. There is no reason, the commission declares, why the underframes for steel cars cannot be made at the plant at which the other parts of a car are constructed and assembled, and in practice it is customary for this to be done. W. L. C.

Locomotive Orders Lowest in Years

Orders for locomotives in 1914 have totaled as follows, according to the Railway Age Gazette:

January	43	July	99
February	139	August	45
March	167	September	17
April	127		
May	121	Total, nine months 1914	818
June	50		

The total for the year at this rate would be about 1100 but the last quarter gives no promise of the average being maintained so that the total may not be above 900 or 1000. The annual average of locomotive purchases in 1901 to 1913, inclusive, was 3798. The greatest number ordered was 6265 in 1905 and the lowest 2538 in 1904. The next lowest was 2850 in 1911. Orders in 1912 were 4515 while in 1913 the downward tendency was indicated in a total of 3467.

The Cambria Steel Company, in order to take up certain loans and provide for current indebtedness, has put out an issue of $3,000,000 6 per cent. gold coupon notes in denominations of $1000 maturing in three years, the company having the privilege of taking up $500,000 or multiples thereof at any interest period on or after October 1, 1915. The interest is payable semi-annually at the banking house of Drexel & Co., Philadelphia, who have taken the entire issue.

The Kokomo Steel & Wire Company, Kokomo, Ind., started its plant in operation Monday, November 23, after a shutdown of two weeks for repairs. The company reports an improved prospect for business in wire products.

SEPTEMBER FOREIGN TRADE

Export Tonnage and Values Show Gain Over August—Marked Increase in Tonnage Imports

The September report of the Bureau of Foreign and Domestic Commerce shows that the decline in the exports of iron and steel and manufactures thereof has been checked temporarily at least. The total value of such exports was $12,531,102 as compared with $10,428,773 in August, or a gain of approximately 20.2 per cent. In August the value of these exports was only 43.6 per cent. of the 1913 figure, while the September value was 54.3 per cent. of the value for the corresponding month last year. The value of the iron and steel and manufactures thereof imported in September was $2,159,965, as compared with $1,965,116 in August and $2,428,841 in September, 1913.

The exports of commodities for which quantities are given totaled 96,482 gross tons in September, against 86,598 tons in August, 114,790 tons in July and 213,057 tons in September, 1913. Although these tonnages have increased about 11 per cent. over the August figures, they are only 45.2 per cent. of those of a year ago. With but four exceptions, all the items given declined. The exceptions are wire rods, "all other" nails, horseshoes, which increased from 98 tons in 1913 to 1309 tons, and tin and terne plates which has increased every month of the present fiscal year over the corresponding month of last year. The total value of iron and steel exports for which tonnages are given was $4,048,248 in September, as compared with $3,410,086 in August and $8,717,335 in September, 1913, the average values per ton of these exports being $41.96, $39.27 and $40.92, respectively.

Details of the exports of these tonnage commodities in September and the nine months ended with September, as compared with the corresponding periods of the previous calendar year, are as follows:

Exports of Iron and Steel

	September		Nine months	
	1914 Gross tons	1913 Gross tons	1914 Gross tons	1913 Gross tons
Pig iron	7,915	21,018	91,714	206,038
Scrap	824	7,697	29,277	72,122
Bar iron	344	995	3,701	12,571
Wire rods	1,913	1,526	41,595	50,005
Steel bars	6,254	15,083	79,270	165,399
Billets, ingots and blooms, n. e. s.	649	3,813	33,262	85,717
Bolts and nuts	1,109	2,105	11,819	17,402
Hoops and bands	456	1,009	6,644	13,283
Horseshoes	1,309	98	2,048	950
Cut nails	102	186	3,050	2,680
Railroad spikes	383	867	5,525	9,224
Wire nails	2,079	2,732	21,428	34,976
All other nails, including tacks	349	253	2,106	3,046
Pipes and fittings	....	30,149	*104,487	240,810
Cast pipes and fittings	3,996	....	†16,819	.....
Wrought pipes and fittings	12,273	....	†30,005	.....
Radiators and cast-iron house heating boilers	259	1,167	2,712	6,637
Steel rails	10,508	40,289	139,773	371,965
Galvanized-iron sheets and plates	3,242	3,599	30,191	65,920
All other iron sheets and plates	488	1,094	6,469	20,117
Steel plates	5,722	14,134	84,366	174,147
Steel sheets	8,248	20,221	97,464	104,703
Structural iron and steel	14,090	27,663	148,257	309,331
Tin and terne plates	4,726	4,238	44,784	48,621
Barb wire	4,950	7,108	52,592	58,817
All other wire	4,294	6,013	53,621	82,917
Totals	96,482	213,057	1,142,979	2,157,398

*Figures are for six months, January to June, inclusive.
†Figures cover period since June 30.

In the month of September the imports of commodities for which tonnages are given amounted to 38,420 gross tons, against 28,769 tons in August, 24,958 tons in July and 19,941 tons in September, 1913. Bar iron, structural iron and steel, sheets and plates, tin and terne plates and wire rods all declined from the figures for August, 1914, and September, 1913, the greatest falling off being in tin and terne plates, which decreased to 92 tons from 1542 tons in August after having increased from 179 tons in July.

Details of the imports of tonnage commodities in September and the nine months ended with September, as compared with the same periods of the last calendar year, are as follows:

Imports of Iron and Steel

	September		Nine months	
	1914 Gross tons	1913 Gross tons	1914 Gross tons	1913 Gross tons
Pig iron (including ferrosilicon)	....	11,419	....	120,612
Ferrosilicon	355	....	4,941	.....
All other pig iron	23,975	....	107,130	.....
Scrap	2,142	1,292	24,493	37,866
Bar iron	609	1,898	14,042	23,305
Structural iron and steel	396	809	8,484	9,825
Hoop or band iron	....	....	*523	.....
Ingots, blooms and steel billets	....	2,274	....	17,765
Steel billets without alloys	46	....	1,740	.....
All other steel billets	3,078	....	31,017	.....
Steel rails	7,342	845	18,682	4,407
Sheets and plates	235	266	3,355	2,556
Tin and terne plates	92	180	14,704	15,602
Wire rods	150	958	5,642	12,664
Totals	38,420	19,941	234,753	244,602

*Figures cover period since June 30.

The total value of the exports of iron and steel and manufactures thereof in the nine months ended with September, 1914, was $152,776,838, against $226,482,431 in the same period of 1913, and the import figures were $22,877,803 and $25,716,377, respectively.

Imports of iron ore in September amounted to 109,176 gross tons, as compared with 135,693 tons in August, 141,838 tons in July and 295,424 tons in September, 1913. For the nine months ended September, 1914, the imports of this commodity were 1,095,752 gross tons against 1,916,733 tons for the corresponding period of 1913.

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The Iron and Metal Markets

HEAVY PIG-IRON BUYING

Buffalo Movement Nearly 250,000 Tons

More Aggressive Selling of Finished Steel Indicated at Pittsburgh and at the Expense of Prices

Sales of pig iron by Buffalo furnaces amounting to 150,000 to 200,000 tons are the chief feature of the iron market in a week that has brought little change in finished steel. A development at Pittsburgh that may become important is the announcement that a leading steel company will sell at present prices for the first quarter of next year and is authorizing its sales managers to meet the market.

It has been found that the better sentiment of the past three weeks has not kept prices from yielding and it is evident that the policy of important steel producers will now be to sell freely for the first quarter of 1915 at the best prices that can be obtained. This may result, as in the closing weeks of 1911, in a more active market and make December, as is being predicted, the best month for bookings in the final quarter. Prices are now close to the well remembered level of three years ago.

The sales of pig iron at Buffalo in two weeks have been close to 250,000 tons, and by some authorities those of the past week are put as high as 200,000 tons. The American Radiator Company alone took 108,000 tons for delivery in the first half of 1915. There were also two 15,000-ton lots, several of 10,000 tons and a considerable number of 5000 tons. Most of the buying was for New England and New York State foundries, and $12 for No. 2 X was generally the basis, though this was not the minimum. Buffalo furnaces are generally sold up far into the first quarter, some well into the second quarter and asking prices of two interests are now $13, with $12.50 as minimum for early delivery. One furnace company will shortly blow in a furnace at Buffalo and one at Detroit.

In other districts Cincinnati next to Buffalo has been active in pig iron, sales there of both Northern and Southern iron being the largest in several months. They include one of 4000 tons, another of 2500 tons and several of 1000 tons. There are indications that the buying by large foundry interests, who were attracted by recent low prices, will broaden into a considerable movement.

Sales of Southern iron by the Steel Corporation were 30,000 tons last week, including 16,000 tons of basic to an Ohio River plant. Three lots of 5000 tons of basic were placed in the Central West by the American Steel Foundries for Alliance and Sharon works, 10,000 tons at $12.75 delivered and 5000 tons at $12.50 at furnace.

November orders in finished lines have been less than the October average with some producers. The Steel Corporation's bookings, including export business, have averaged about the same as for last month and in the past week have been slightly better. Its ingot production is now at 38 per cent. of capacity, after having been considerably less early in the month. Out of its 119 blast furnaces 74 are idle, the active capacity being 40 per cent. of the whole. Since November 1 a number of its furnaces have gone out, including one Duquesne, one Ohio and one Central at Cleveland in the past week.

Published statements as to steel works and rolling mill resumptions are misleading. There are alternating stops and starts, the latter being published and the former suppressed. In the industry as a whole it is doubtful if any real gain has been made in employment this month.

Bars, plates and structural shapes show a shade more activity this week. In the Central West the first two have sold at 1.05c., Pittsburgh, in ordinary business. The weakness of steel bars is due in part to the competition of iron bars, a sale of the latter, made at Buffalo, figuring back to 0.90c. at Chicago district mill.

The New York Central's 25,000-ton rail order has been placed with the Lackawanna Steel Company and largely will be rolled before 1915. Some foreign rail business has been done of which details are not given out. On the 25,000 tons of 60, 70 and 80-lb. rails and 5000 tons of track supplies for Norway, bids will be opened at Christiania on November 27. Chicago reports several fair orders for track fastenings, one tie plate contract being for 6500 tons.

The length to which cast-iron pipe makers have gone to get winter work is shown in a bid of $19.60 on 4000 tons of 60-in. pipe at Boston this week, the next lowest bid being $20.75. Dayton, Ohio, is in the market for 5500 tons of 3 to 36-in. pipe.

Our London cable refers to the sale of ferromanganese afloat at $62, c.i.f., Baltimore, although $68 was nominally the market before the British Government embargo. No new shipments from England have yet been arranged for, as the result of Washington negotiations. In the case of manganese ore, the State Department's efforts released loaded vessels at Indian ports for the Steel Corporation, but there is no promise of further shipments to this country from India.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type. Declines in Italics

At date, one week, one month, and one year previous.

	Nov. 25, 1914.	Nov. 18, 1914.	Oct. 28, 1914.	Nov. 26, 1913.
Pig Iron, Per Gross Ton:				
No. 2 X, Philadelphia....	$14.50	$14.50	$14.50	$15.50
No. 2, Valley furnace...	12.75	12.75	12.75	13.50
No. 2 Southern, Cin'ti...	12.90	12.90	12.90	13.75
No. 2, Birmingham, Ala..	10.00	10.00	10.00	10.50
No. 2, furnace, Chicago*	12.50	12.50	12.75	14.75
Basic, del'd, eastern Pa.	14.00	14.00	14.00	15.00
Basic, Valley furnace....	*12.40*	12.50	12.50	12.85
Bessemer, Pittsburgh....	**14.70**	14.55	14.65	15.90
Malleable Bess., Ch'go*..	12.75	12.75	13.00	14.75
Gray forge, Pittsburgh...	13.40	13.40	13.40	14.25
L. S. charcoal, Chicago..	15.75	15.75	15.75	15.25
Billets, etc., Per Gross Ton:				
Bess. billets, Pittsburgh.	$19.00	$19.00	$19.50	$20.50
O.-h. billets, Pittsburgh..	19.00	19.00	19.50	20.50
O.-h. sheet bars, P'gh...	20.00	20.00	20.00	21.00
Forging billets, base, P'gh.	24.00	24.00	25.00	26.00
O.-h. billets, Phila.....	21.40	21.40	22.40	22.90
Wire rods, Pittsburgh...	25.00	25.00	25.50	25.50

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Old Material, Per Gross Ton:	Nov. 25, 1914.	Nov. 18, 1914.	Oct. 28, 1914	Nov. 26, 1913.
Iron rails, Chicago	11.00	11.00	11.00	13.50
Iron rails, Philadelphia	13.00	13.00	13.00	17.00
Carwheels, Chicago	9.50	9.50	10.50	12.00
Carwheels, Philadelphia	9.50	9.50	9.50	12.00
Heavy steel scrap, P'gh.	10.00	10.00	10.50	11.25
Heavy steel scrap, Phila.	9.25	9.25	9.50	10.00
Heavy steel scrap, Ch'go.	8.00	7.75	8.50	9.50
No. 1 cast, Pittsburgh	10.50	10.50	11.50	12.00
No. 1 cast, Philadelphia	11.00	11.00	11.00	12.50
No. 1 cast, Ch'go (net ton)	8.50	8.50	9.00	10.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Bess. rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia	1.12	1.12	1.12	1.27½
Iron bars, Pittsburgh	1.15	1.15	1.15	1.40
Iron bars, Chicago	0.95	0.95	0.97½	1.15
Steel bars, Pittsburgh	1.10	1.10	1.15	1.25
Steel bars, New York	1.26	1.26	1.31	1.41
Tank plates, Pittsburgh	1.05	1.05	1.10	1.25
Tank plates, New York	1.26	1.26	1.26	1.41
Beams, etc., Pittsburgh	1.10	1.10	1.15	1.25
Beams, etc., New York	1.26	1.26	1.31	1.41
Skelp, grooved steel, P'gh	1.10	1.10	1.15	1.25
Skelp, sheared steel, P'gh	1.15	1.15	1.20	1.35
Steel hoops, Pittsburgh	1.25	1.25	1.25	1.45
Sheets, Nails and Wire,				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, P'gh.	1.85	1.85	1.90	1.95
Galv. sheets, No. 28, P'gh	2.85	2.85	2.90	2.95
Wire nails, Pittsburgh	1.55	1.60	1.60	1.55
Cut nails, Pittsburgh	1.60	1.60	1.60	1.55
Fence wire, base, P'gh	1.35	1.40	1.40	1.35
Barb wire, galv., P'gh	1.95	2.00	2.00	1.95
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	$1.50	$1.50	$1.60	$1.75
Furnace coke, future	1.75	1.75	1.75	1.90
Foundry coke, prompt	1.90	1.90	2.00	2.50
Foundry coke, future	2.15	2.15	2.15	2.75
Metals,				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	12.62½	12.00	11.50	15.50
Electrolytic copper, N. Y.	12.50	11.87½	11.25	14.75
Spelter, St. Louis	5.15	4.95	4.95	5.10
Spelter, New York	5.30	5.10	5.10	5.25
Lead, St. Louis	3.77½	3.62½	3.37½	4.15
Lead, New York	3.90	3.70	3.50	4.30
Tin, New York	33.87½	32.50	30.75	39.50
Antimony, Hallett's, N. Y.	15.00	15.00	15.00	7.12½
Tin plate, 100-lb. box, P'gh.	$3.15	$3.15	$3.15	$3.40

Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11.6c.; Cleveland, 10.5c.; Cincinnati, 15.8c.; Indianapolis, 17.9c.; Chicago, 18.9c.; St. Louis, 23.6c.; Kansas City, 43.6c.; Omaha, 43.6c.; St. Paul, 32.9c.; Denver, 68.6c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes. The foregoing rates to the Pacific coast are by rail. The rate via New York and the Panama Canal on plates, shapes, etc., is 46c.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.05c., base, net cash, 30 days.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, 3 in. and over, 1.10c. Extras on other shapes and sizes are as follows:

	Cents per lb.
I-beams over 15 in.	.10
H-beams over 18 in.	.10
Angles over 6 in., on one or both legs	.10
Angles, 3 in. on one or both legs, less than ¼ in. thick, as per steel bar card, Sept. 1, 1909	.70
Tees, structural sizes (except elevator, handrail, car truck and conductor rail)	.05
Channels and tees, under 3 in. wide, as per steel bar card, Sept. 1, 1909	.20 to .80
Deck beams and bulb angles	.30
Hand rail tees	.75
Cutting to lengths, under 3 ft. to 2 ft. inclusive	.25
Cutting to lengths, under 2 ft. to 1 ft. inclusive	.50
Cutting to lengths, under 1 ft.	1.55

No charge for cutting to lengths 3 ft. and over.

Wire Products.—Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots to jobbers, annealed, $1.35; galvanized, $1.75. Galvanized barb wire and fence staples to jobbers, $1.95; painted, $1.55. Wire nails to jobbers, $1.55. Woven wire fencing, 73 per cent. off list for carloads; 72 off for 1000-rod lots; 71 off for less than 1000-rod lots.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plain Wire, per 100 lb.

Nos.	0 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.50	$1.55	$1.60	$1.65	$1.75	$1.85	$1.95	$2.05
Galvanized	1.90	1.95	2.00	2.05	2.15	2.25	2.65	2.75

Wire Rods.—Bessemer, open-hearth and chain rods, $25 to $25.50.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on steel pipe in effect from November 2, 1914, and iron pipe from June 2, 1913, all full weight:

Butt Weld

Steel: Inches	Black	Galv.	Iron: Inches	Black	Galv.
⅛, ¼ and ⅜	74	53½	⅛ and ¼	66	47
½	78	67½	⅜	65	46
¾ to 3	81	72½	½	69	56
			¾ to 2½	72	61

Lap Weld

2	78	69½	1¼	56	45
2½ to 6	80	71½	1½	67	56
7 to 12	77	66½	2	68	58
13 and 14	63½	..	2½ to 4	70	61
15	61	..	4½ to 6	70	61
			7 to 12	68	55

Reamed and Drifted

1 to 3, butt	79	70½	1 to 1½, butt	70	59
2, lap	76	67½	2, butt	70	59
2½ to 6, lap	78	69½	1¼, lap	54	43
			1½, lap	65	54
			2, lap	66	56
			2½ to 4, lap	68	59

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	69	58½	⅜	63	52
½	74	67½	½	67	60
¾ to 1½	78	71½	¾ to 1½	71	62
2 to 3	79	72½	2 and 2½	72	63

Lap Weld, extra strong, plain ends

2	75	66½	1½	65	59
2½ to 4	77	68½	2	66	58
4½ to 6	76	67½	2½ to 4	70	61
7 to 8	69	58½	4½ to 6	69	60
9 to 12	64	53½	7 to 8	63	53
			9 to 12	58	47

Butt Weld, double extra strong, plain ends

½	64	57½	½	57	49
¾ to 1½	67	60½	¾ to 1½	60	52
2 to 2½	69	62½	2 and 2½	62	54

Lap Weld, double extra strong, plain ends

2	65	58½	2	55	49
2½ to 4	67	60½	2½ to 4	60	54
4½ to 6	66	59½	4½ to 6	59	53
7 to 8	59	48½	7 to 8	52	42

To the large jobbing trade an additional 5 per cent. is allowed over the above discounts.

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

Boiler Tubes.—Discounts to jobbers, in carloads, in effect from May 1, 1914, on steel and from January 2, 1914, on iron, are as follows:

Lap Welded Steel		*Standard Charcoal Iron*	
1¾ and 2 in.	62	1½ in.	45
2¼ in.	59	1¾ and 2 in.	49
2½ and 2¾ in.	65	2¼ in.	45
3 and 3¼ in.	70	2½ to 2¾ in.	54
3½ and 4½ in.	72	3 and 3¼ in.	57
5 and 6 in.	65	3½ and 4½ in.	60
7 to 13 in.	62	5 and 6 in.	49

Locomotive and steamship special charcoal grades bring higher prices.

2½ in. and smaller, over 18 ft., 10 per cent. net extra.

2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft., and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points. On standard charcoal iron tubes for desirable orders the above discounts are shaded an extra 5, and occasionally two 5's by some makers.

Sheets.—Makers' prices for mill shipment on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, as as follows, f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice:

Blue Annealed Sheets

	Cents per lb.
Nos. 3 to 8	1.30 to 1.35
Nos. 9 to 10	1.35 to 1.40
Nos. 11 and 12	1.40 to 1.45
Nos. 13 and 14	1.50 to 1.55
Nos. 15 and 16	1.60 to 1.65

Box Annealed Sheets, Cold Rolled

	Cents per lb.
Nos. 10 and 11	1.50 to 1.55
No. 12	1.50 to 1.55
Nos. 13 and 14	1.55 to 1.60
Nos. 15 and 16	1.60 to 1.65
Nos. 17 to 21	1.65 to 1.70
Nos. 22 and 24	1.70 to 1.75
Nos. 25 and 26	1.75 to 1.80
No. 27	1.80 to 1.85
No. 28	1.85 to 1.90
No. 29	1.90 to 1.95
No. 30	2.00 to 2.05

Galvanized Sheets of Black Sheet Gauge

	Cents per lb.
Nos. 10 and 11	1.85 to 1.90
No. 12	1.95 to 2.00
Nos. 13 and 14	1.95 to 2.00
Nos. 15 and 16	2.10 to 2.15
Nos. 17 to 21	2.25 to 2.30
Nos. 22 and 24	2.40 to 2.45
Nos. 25 and 26	2.55 to 2.60
No. 27	2.70 to 2.75
No. 28	2.85 to 2.90
No. 29	3.00 to 3.05
No. 30	3.15 to 3.20

Chicago

CHICAGO, ILL., November 25, 1914.—(*By Wire.*)

Mill operations and the sale of mill products have benefited but little thus far from whatever favorable turn the general situation may have taken. Normal conditions prevailing at this time of the year all militate against any very active resumption of buying. Aside from the question of seasons, there is still much in the situation to suggest a slow mending of the difficulties now holding business in check. Comparative reports indicate that the mills in this district are operating on even leaner schedules than is true elsewhere. The past week brought no change for the better. Railroad activity is confined to a fairly liberal buying of track fastenings. Users of shapes, plates, sheets and bars are endeavoring to postpone shipments falling due before the first of the year, while at the same time they are negotiating for first-quarter contracts. Prices for plates and bars for delivery in this territory are pretty generally down to the level of 1.05c., Pittsburgh. In other products the volume of current business suggests no comment of interest. Inquiries for pig iron are more numerous but the interest seems not to be of a character suggesting a real confidence in the outlook. The more optimistic sentiment which has prevailed during the past few weeks has again served as sufficient excuse for an attempt to strengthen the position of the scrap market, but little is being accomplished.

Pig Iron.—Encouraged by the exceptionally low prices prevailing, by the activity in other districts, and by the near approach of the first quarter, this market has suddenly aroused from its apathy and sellers are receiving many inquiries for a wide variety of needs. One Inland Steel stack will be out a short time while a hot spot is being patched, but no interference with selling plans is anticipated. The less favorable aspect of the situation lies in the fact that the foundry melt of pig iron shows few indications of being larger, neither is the foundrymen's prospect for business in any particular degree more tangible. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace and do not include a local switching charge averaging 50c. a ton:

Lake Superior charcoal	$15.75 to $16.75
Northern coke foundry, No. 1	13.25 to 13.75
Northern coke foundry, No. 2	12.50 to 13.00
Northern coke foundry, No. 3	12.50 to 13.00
Southern coke, No. 1 f'dry and 1 soft.	14.50 to 14.75
Southern coke, No. 2 f'dry and 2 soft.	14.00 to 14.25
Malleable Bessemer	12.75 to 13.25
Standard Bessemer	15.50
Basic	12.25 to 12.50
Low phosphorus	20.00 to 20.50
Jackson Co. and Ky. silvery, 6 per cent.	16.90 to 17.40
Jackson Co. and Ky. silvery, 8 per cent.	17.90 to 18.40
Jackson Co. and Ky. sil'vy, 10 per cent.	18.90 to 19.40

(*By Mail*)

Rails and Track Supplies.—There has been a fairly liberal buying of track fastenings, the purchases of the Missouri Pacific and Frisco systems being especially prominent. One of the trunk lines of the Northwest also took a round tonnage of fastenings and tie-plates. The absence of any negotiations for rails would seem to indicate that the fastenings now being ordered are intended for the maintenance of track now in place. The local rail mills have not yet resumed the rolling of rails. We quote standard railroad spikes at 1.45c. to 1.50c., base; track bolts with square nuts, 1.85c. to 1.90c., base, all in carload lots, Chicago; tie-plates, $25 to $27, f.o.b. mill, net ton; standard section Bessemer rails, Chicago, 1.25c., base; open-hearth, 1.34c.; light rails, 25 to 45 lb., 1.25c.; 16 to 20 lb., 1.30c.; 12 lb., 1.35c.; 8 lb., 1.40c.; angle bars, 1.50c., Chicago.

Structural Material.—The present situation presents a contrast in which users of steel are on the one hand showing considerable interest in first-quarter contracts, while on the other hand they are endeavoring to delay shipments now due from the mill until after the first of the year. This latter attitude simply reflects the natural disposition of all consumers to hold down their inventory at this season in order that they may turn the year with as good a cash showing as possible. Contracts for fabricated material placed during the week aggregated less than 400 tons. We quote for Chicago delivery of plain material from mill 1.25c. to 1.289c.

Users of steel are satisfying their limited needs, which are for the most part of small tonnage, very largely from stock, and to this condition may be attributed the fair volume of store business. We continue to quote for shapes from store 1.75c., Chicago.

Plates.—Quotations for plates again present the weakest aspect of the market and sales at the equivalent of 1.05c., Pittsburgh, have been made pretty generally and on comparatively small tonnage. Plate users are a little slow to make contracts for the first quarter at the price of $1 a ton higher, in view of the ease with which current prices seem to be obtained. We quote for Chicago delivery of plates from mill 1.239c. to 1.289c.

We quote for plates out of stock Chicago delivery 1.75c.

Sheets.—Very little encouragement for the mills is as yet obtainable in the attitude of sheet buyers. There is a pronounced disposition to delay shipments on expiring contracts, but the mills are adhering for the most part to their policy of canceling tonnage not taken out when due. Prices show no change. We quote for Chicago delivery from mill: No. 10 blue annealed, 1.539c.; No. 28 black, 2.089c.; No. 28 galvanized, 3.089c.

We quote for Chicago delivery from jobbers' stocks as follows, minimum prices applying on bundles of 25 or more: No. 10 blue annealed, 1.95c.; No. 28 black, 2.55c.; No. 28 galvanized, 3.55c.

Bars.—New orders for bars either of iron or steel continue conspicuously meager in volume. Bar steel, however, seems not to show the general weakness in price that is true of plates although some sales have been made as low as 1.05c., Pittsburgh. For the very small tonnage of bar iron being booked 0.95c. can still be done. We quote for mill shipments as follows: Bar iron, 0.95c. to 1.05c.; soft steel bars, 1.25c.; hard steel bars, 1.20c.; shafting in carloads, 65 per cent. off; less than carloads, 60 per cent. off.

We quote store prices for Chicago delivery: Soft steel bars, 1.65c.; bar iron, 1.65c.; reinforcing bars, 1.65c. base, with 5c. extra for twisting in sizes ½ in. and over and usual card extras for smaller sizes; shafting 60 per cent. off.

Rivets and Bolts.—For ordinary business the following quotations apply, though additional discounts of 5 per cent. are reported where especially attractive orders are involved: Carriage bolts up to ⅝ x 6 in., rolled thread, 85; cut thread, 80-20; larger sizes, 80; machine bolts up to ¾ x 4 in., rolled thread, 85-5; cut thread, 85; larger sizes, 80-5; coach screws, 85-10; hot pressed nuts, square head, $6.60 off per cwt.; hexagon, $7.60 off per cwt. Structural rivets, ¾ to 1¼ in., 1.58c., base, Chicago, in carload lots; boiler rivets, 10c., additional.

We quote out of store: Structural rivets, 2.20c.; boiler rivets, 2.30c.; machine bolts up to ¾ x 4 in., 75-15; larger sizes, 70-10-10; carriage bolts up to ⅝ x 6 in., 75-10; larger sizes, 70-15 off; hot pressed nuts, square head, $6, and hexagon, $6.70 off per cwt.

Wire Products.—The domestic demand for wire, especially nails, shows only slight improvement. The dullness in fence wire is a matter of less concern because of the heavy exportations of barb wire. Nail prices are now very generally down to the 1.55c., Pitts-

burgh, level. We quote to jobbers as follows: Plain wire, No. 9 and coarser, base, $1.539; wire nails, $1.739; painted barb wire, $1.739; galvanized, $2.139; polished staples, $1.739; galvanized, $2.139, all Chicago.

Cast-Iron Pipe.—Interest among pipe makers centers in the expected purchase of 25,000 tons at Detroit. Other municipal requirements lag and the only purchases of any importance during the week were 300 tons at Springfield, Ohio, placed with the Lynchburg Foundry Company, and 500 tons at Pueblo, Col. We quote as follows, per net ton, Chicago: Water pipe, 4 in., $26; 6 to 12 in., $24; 16 in. and up, $23.50, with $1 extra for gas pipe.

Old Material.—Despite an unchanged consumers' situation which continues to make for an increasingly depressed scrap market, the dealers have taken hold of the improvement in general business sentiment and in their trading are endeavoring to give to the market the appearance of returning strength. Some buying of steel is noted on the basis of $8.25, Chicago, but in other directions activity was limited. Sales of carwheels were made at $9.50. Offerings of scrap by the railroads include 2000 tons from the St. Paul, 4000 tons from the Rock Island, about 3500 tons from the Michigan Central and 800 tons from the Grand Trunk. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Old iron rails	$11.00 to $11.25
Old steel rails, rerolling	9.50 to 10.00
Old steel rails, less than 3 ft.	9.25 to 9.50
Old carwheels	9.50 to 10.00
Heavy melting steel scrap	8.00 to 8.25
Frogs, switches and guards, cut apart	8.00 to 8.50
Shoveling steel	7.75 to 8.00
Steel axle turnings	6.50 to 7.00

Per Net Ton

Iron angles and splice bars	$10.25 to $10.75
Iron arch bars and transoms	10.25 to 10.50
Steel angle bars	7.25 to 7.75
Iron car axles	13.75 to 14.00
Steel car axles	10.25 to 10.75
No. 1 railroad wrought	7.50 to 7.75
No. 2 railroad wrought	7.00 to 7.25
Cut forge	7.00 to 7.25
Steel knuckles and couplers	8.00 to 8.50
Steel springs	9.00 to 9.50
Locomotive tires, smooth	8.50 to 9.00
Machine shop turnings	4.50 to 4.75
Cast borings	4.50 to 4.75
No. 1 busheling	6.50 to 6.75
No. 2 busheling	5.50 to 5.75
No. 1 boilers, cut to sheets and rings	5.00 to 5.50
Boiler punchings	7.75 to 8.00
No. 1 cast scrap	8.50 to 8.75
Stove plate and light cast scrap	7.75 to 8.25
Grate bars	7.25 to 7.75
Railroad malleable	7.75 to 8.00
Agricultural malleable	7.25 to 7.50
Pipes and flues	5.50 to 5.75

Philadelphia

PHILADELPHIA, PA., November 24, 1914.

An increased amount of actual business as well as inquiry continues to build up a more sanguine feeling in this market, although there are those who say that the betterment has not reached them as yet. In miscellaneous steel products the past week is pronounced better than the preceding one. The demand for bars has improved and some makers of plates have experienced more active buying, but structural material and sheets appear to be at low ebb. The most striking change is in pig iron, for which there have been larger and more numerous inquiries for delivery into next year, consumers having come to a realization that the low prices which have prevailed make the time an opportune one for buying more iron, in some cases more than they actually need. At the same time the interest shown is causing a reaction from the very low levels which have been quoted. Foreign inquiries continue to come along, but no great amount of business has yet resulted from them. The demand for ferromanganese is quiet and the restriction on imports is still regarded with equanimity.

Iron Ore.—Importations of the week ended November 21 were 11,234 tons from Sweden, 41,000 tons from Cuba, and 7800 tons from South America. The largest steel interest is reported to have bought 100,000 tons of Brazilian manganese ore, but this has not been confirmed.

Pig Iron.—There is a growing conviction that the turn has come in the iron market and the opinion is supported by the fact that on Monday of this week there were found on the desks of representative sellers inquiries for between 10,000 and 12,000 tons of various grades, most of them specifying deliveries into the first and second quarters. Some of the inquiries lately received involved excellent quantities, and two of them were from railroads, one of which inquired for spot delivery iron and the other for first quarter, the two amounting to 4000 tons. It is reported that more Buffalo producers have withdrawn the $12 furnace, or $14.45 Philadelphia, quotation which was met by eastern Pennsylvania makers, causing the prices of the latter to dip below $14.45, Philadelphia. It is still declared that the low price is available in some directions for prompt delivery, and this is an unsatisfactory factor of the present situation with producers. Another is that the surplus stocks in the yards of some eastern Pennsylvania steel mills is in the thousands of tons. Buyers realize that iron has been abnormally cheap and some of them have shown a disposition to buy a good distance ahead on the basis of the low price, but sellers are reluctant. On the contrary, some of the Buffalo representatives are asking from 75c. to $1 more for first-quarter deliveries. A seller of Virginia iron last week booked orders for 1700 tons, mostly for delivery in New England. In the week, 2000 tons of Southern iron was sold here on the basis of $10, Birmingham. Additional sales have been made of Delaware River standard low phosphorus at $19.50 for delivery in Chester, Pa., there being practically no freight expense involved. Quotations for standard brands for early delivery in buyers' yards in this district are as follows:

Eastern Penna. No. 2 X foundry	$14.50 to $14.75
Eastern Penna. No. 2 plain	14.25 to 14.50
Virginia No. 2 X foundry	15.25
Virginia No. 2 plain	15.00
Gray forge	13.50 to 13.75
Basic	14.00
Standard low phosphorus	20.00 to 21.00

Ferroalloys.—There has not seemed to be much accord in views on the existing situation in ferromanganese. Where one dealer says that a few hundred tons are tied up awaiting shipment on the other side because of England's embargo on its exportation, another dealer says he made sales last week and ordered from abroad. In comment, the first dealer says that the second one has probably sold ferromanganese which already was on the sea. The demand is light and $68, seaboard, is usually given as the quotation for 80 per cent. The negotiations having for their purpose exportations from England under certain restrictions are understood to be unconcluded. At the same time there is little or no uneasiness shown anywhere. The quotation for 50 per cent. ferrosilicon is $71 to $73, Pittsburgh, according to quantity.

Bars.—One office booked orders for close to 1500 tons of steel bars at 1.25c., Philadelphia, for delivery this year, while the sentiment based on more generous inquiry is correspondingly better. The same company in the past few days has received inquiry for 6000 tons of billets, blooms and sheet bars for export. Despite the reports of lower than 1.10c., Pittsburgh, in other territories, it is declared that no sales have been made here at below that base price. Iron bars are unchanged at 1.12c., Philadelphia, delivered from nearby mills.

Plates.—One local maker reports that current orders are both heavier and more numerous, and that the general situation is better, but this view is not shared by other manufacturers. Business has resulted from the rebuilding of the steamer Santa Catalina, a Pacific coast vessel which was partly destroyed by fire, and is owned by W. R. Grace & Co. Bids are in also on a new steamer, the name of whose owner has not yet been divulged. The placing of locomotive orders has also resulted in a little business. A foreign inquiry from a shovel manufacturer calls for 300 tons of light plates of special sizes. Quotations continue at 1.25c. to 1.30c., Philadelphia, according to the size of lots ordered.

Billets.—The unsatisfactory condition of recent weeks is not changed. Business can be done at $21.40, Philadelphia, based on $19, Pittsburgh, although some makers in this territory try to get 50c. more. The

Tredegar Company, Richmond, Va., recently bought 1200 tons of billets for horseshoes.

Structural Material.—Offerings of structural work are extremely scarce and there is no change in the situation unless it is additional weakness in prices which might appear with the request for estimates on a good job. Meanwhile 1.25c., Philadelphia, is quoted.

Sheets.—The demand is quiet and there is little or no encouragement in the near future for sheet mills of this district. For No. 10 blue annealed sheets 1.50c., Philadelphia, is quoted.

Coke.—There are a few contracts under consideration, one of them involving 20,000 tons, but they are moving very slowly. Prompt furnace coke is quoted at about $1.60 per net ton at oven, and contract furnace at around $1.75. Prompt foundry ranges from $2.10 to $2.50 and contract foundry at $2.35 to $2.50. Freight rates to this city from the principal producing districts are as follows: Connellsville, $2.05; Latrobe, $1.85, and Mountain, $1.65.

Old Material.—Except for a somewhat better inquiry for specialties, the market continues extremely dull, but the hopeful feeling is unimpaired. Quotations for delivery in buyers' yards in this district, covering eastern Pennsylvania and taking freight rates from 35c. to $1.35 per gross ton, are as follows:

No. 1 heavy melting steel	$9.25 to $9.50
Old steel rails, rerolling	11.50 to 12.00
Low phosphorus heavy melting steel scrap	13.50 to 14.00
Old steel axles	13.00 to 13.50
Old iron axles	17.50 to 18.00
Old iron rails	13.00 to 14.00
Old carwheels	9.50 to 10.00
No. 1 railroad wrought	11.50 to 12.00
Wrought-iron pipe	9.50 to 10.00
No. 1 forge fire	8.00 to 8.50
Bundled sheets	8.00 to 8.50
No. 2 busheling	7.75 to 8.25
Machine shop turnings	7.50 to 8.00
Cast borings	7.50 to 8.00
No. 1 cast	11.00 to 12.00
Grate bars, railroad	8.00 to 8.50
Stove plate	8.00 to 8.50
Railroad malleable	9.00 to 9.50

Cleveland

CLEVELAND, OHIO, November 24, 1914.

Iron Ore.—Storms have interfered with the boat schedules and delayed the closing of the season of navigation. It was expected that the last ore would be started down yesterday, but because of the severe weather the final shipments will be made from Escanaba next Friday or Saturday. We quote prices as follows: Old Range Bessemer, $3.75; Mesaba Bessemer, $3.50; old range non-Bessemer, $3; Mesaba non-Bessemer, $2.85.

Pig Iron.—An improved demand is observed for foundry iron for delivery in Indiana and Michigan for first quarter and first half. A number of sales have been made in lots up to 1000 tons and a fair volume of inquiry is pending. Some of the Detroit stove manufacturers have bought sparingly for the first quarter. Some malleable iron is also being sold for future delivery. In northern Ohio the market continues dull, although quite a few orders are being taken for small lots of Southern iron for delivery through first half. These sales are being made on the basis of $10, Birmingham. The only active inquiry of any size pending is from an Akron furnace manufacturer for 1000 tons of No. 2 Northern for first half. Northern foundry iron is being offered as low as $12.50, Valley furnace. There are no new inquiries for steel-making iron. Cleveland quotations are unchanged at $12.75 at furnace for outside shipment and $13.25 delivered. We quote delivered Cleveland as follows:

Bessemer	$14.70
Basic	13.45
Northern No. 2 foundry	$13.25 to 13.50
Southern No. 2 foundry	14.00
Gray forge	13.00
Jackson Co. silvery, 8 per cent. silicon	17.62
Standard low phos., Valley furnace	20.00

Coke.—The market is exceedingly dull, sales being limited to small lots of foundry coke for prompt shipment. We quote best grades of foundry coke at $2.15 to $2.35 per net ton at oven. Standard makes of furnace coke are held at $1.50 to $1.60 per net ton at oven.

Finished Iron and Steel.—The better sentiment that has existed in the steel market during the past two weeks has finally been followed by an improvement in orders. Some fairly good specifications have come out for steel bars, plates and structural material, and there is an increase in current orders, mostly for small lots. Some contracts are being placed for future delivery. However, weakness in the market appears more pronounced in Cleveland territory than in other sections. Steel bars are selling here in carload lots for prompt shipment on a basis of 1.05c. Pittsburgh, although all the mills are not meeting this price. On plates the 1.05c. price appears to be more general and some sellers state that they are no longer able to take orders at a higher price. Structural material appears to be well maintained at 1.10c., Pittsburgh. Extreme weakness in the bar-iron market is indicated by the fact that a Chicago mill has sold iron bars for delivery in Buffalo on a basis of about 0.90c. at mill. Local mills are not attempting to meet the low prices prevailing on iron bars. We quote iron bars at 1.10c. for Cleveland delivery. Some first-quarter contracts for steel bars, plates and structural material are being placed at 1.10c. to 1.15c. Some tin-plate and wire contracts are also being made, these being for delivery through first half. New structural work that will be out shortly includes plant additions to be erected by the Willys-Overland Company, Toledo, that will require about 1600 tons of structural material and 1500 tons of reinforcing bars. The Mettler-Gloyd Company, Cleveland, has taken the general contract for the Belmont Building, Cleveland, that will require about 250 tons of reinforcing bars. Improved financial conditions are indicated by the fact that this building was projected a few months ago, but its financing was deferred until the present time. The sheet market is not active. The general ruling prices are 1.90c. for No. 28 black, 2.85c. for No. 28 galvanized, and 1.35c. for No. 10 blue annealed. Warehouse prices are 1.80c. for steel bars and 1.90c. for plates and structural material.

Bolts, Nuts and Rivets.—Considerable improvement is noted in current orders for bolts and nuts. The usual price concessions are being made for early delivery, but some makers expect a firmer market and are declining to quote for delivery beyond January 1. Rivets are not firm at $1.45 for structural and $1.55 for boiler rivets for carload lots. Discounts are as follows: Common carriage bolts, ⅜ x 6 in., smaller or shorter, rolled thread, 80 and 20 per cent.; cut thread, 80 and 15 per cent.; larger or longer, 75 and 15 per cent.; machine bolts with h.p. nuts, ⅜ x 4 in., smaller or shorter, rolled thread, 80 and 25 per cent.; cut thread, 80 and 20 per cent.; larger or longer, 80 per cent.; coach and lag screws, 80 and 25 per cent.; square h.p. nuts, blank or tapped, $6.30 off; hexagon h.p. nuts, blank or tapped, $7.20 off; c. p. c. and t. square nuts, blank or tapped, $6 off; hexagon ⅝ in. and larger, $7.20 off; 9/16 in. and smaller, $7.80 off; semi-finished hexagon nuts, ⅝ in. and larger, 85, 10 and 5 per cent.; 9/16 in. and smaller, 85, 10, 10 and 5 per cent.

Old Material.—The sentiment in the scrap trade is considerably better, but no improvement in business has so far appeared. Very little scrap is being sold to the mills and shipping orders are light, most of the consumers taking but little on contracts. The market in Youngstown is fully as dull as in Cleveland. Prices appear to have gone no lower, but not enough business is coming out to test prices, and all quotations are unchanged. We quote f.o.b. Cleveland, as follows:

Per Gross Ton	
Old steel rails, rerolling	$11.00 to $11.75
Old iron rails	12.00
Steel car axles	11.75 to 12.00
Heavy melting steel	8.50 to 9.25
Old carwheels	10.00 to 10.50
Relaying rails, 50 lb. and over	23.00 to 25.00
Agricultural malleable	8.00 to 8.50
Railroad malleable	9.00 to 9.25
Light bundled sheet scrap	7.50 to 8.00
Per Net Ton	
Iron car axles	$16.75 to $17.00
Cast borings	5.50 to 5.75
Iron and steel turnings and drillings	5.00 to 5.25
Steel axle turnings	6.00 to 6.25
No. 1 busheling, new	8.00 to 8.25
No. 1 busheling, old	7.75 to 8.00
No. 1 railroad wrought	9.00 to 9.50
No. 1 cast	9.25 to 9.75
Stove plate	7.50

Cincinnati

CINCINNATI, OHIO, November 25, 1914.—(*By Wire.*)

Pig **Iron.**—Foundry-iron consumers in this territory are taking a more active interest in market conditions. Numerous inquiries are before the trade covering lots of iron to be shipped during first half of next year. From this immediate vicinity there are several requests for prices, mostly from jobbing foundries, for quantities ranging from 100 to 1500 tons. Several orders have been closed from southern Ohio customers, the largest among which is probably 2500 tons, about equally divided between Northern and Southern iron. This does not include one order placed by a central Ohio melter, estimated at 4000 tons, most of which will be shipped from the Ironton district. It was reported that this buyer was able to shade the regular quotation of $13 at furnace, but this particular lot of iron was said to be a speculative lot bought some time ago, and it is further reported that there is some question as to the analysis showing strictly No. 2 grade. Other central Ohio consumers bought 1000 tons of Northern iron for first half and 1200 tons was also taken by a northern Ohio buyer. Several of the local inquiries reported last week have developed into orders and two or three deals of some consequence are yet to be closed. An encouraging feature is the inquiry from different Southern railroads, the most notable of which is one from the Norfolk & Western for a six months' supply, aggregating 1200 tons. This same railroad also wants some charcoal iron. Several Michigan melters have put out inquiries and some contracting has been done in that territory. As far as the foundry iron situation is concerned the outlook is much brighter and already hints have been given out as to the strengthening of prices being contemplated. At this time several brands of Southern iron can be purchased at $10, Birmingham basis, for first-half delivery. The regular first-half quotation on Northern iron remains at $13, Ironton. The demand for both malleable and basic is light. Based on freight rates of $2.90 from Birmingham and $1.26 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 f'dry and 1 soft.	$13.40 to $13.90
Southern coke, No. 2 f'dry and 2 soft.	12.90 to 13.40
Southern coke, No. 3 foundry	12.40 to 12.90
Southern No. 4 foundry	11.90 to 12.40
Southern gray forge	11.40 to 11.90
Ohio silvery, 8 per cent. silicon	17.20 to 17.70
Southern Ohio coke, No. 1	15.26 to 15.76
Southern Ohio coke, No. 2	14.26 to 14.76
Southern Ohio coke, No. 3	14.01 to 14.26
Southern Ohio malleable Bessemer	14.26
Basic, Northern	14.51 to 15.01
Lake Superior charcoal	15.25 to 17.25
Standard Southern carwheel	26.90 to 27.40

(*By Mail*)

Coke.—No business is expected in furnace coke in this territory, until more furnace operators decide on plans for next year. Little new contracting for foundry coke is being done, and the principal matter of concern is to obtain specifications on contracts, shipments on many of which are long past due. Coke sellers derive some comfort from the fact that the consumption is greater in local foundries than for some time. Connellsville furnace grades are quoted around $1.60 to $1.70 per net ton at oven, and foundry from $2 to $2.25. Pocahontas and Wise County producers are still asking 10c. to 25c. per ton over Connellsville quotations.

Finished Material.—Some improvement is noted in both black and galvanized sheets. Jobbers and users are placing more spot orders, and it is generally believed that the bottom has been reached as far as prices are concerned. We continue prompt shipment quotations on No. 28 black sheets at 2.058c., and galvanized, 3.058c., Cincinnati, or Newport, Ky. A few small orders for reinforcing concrete bars have been received from outside customers, who have contracts for public structures, and who find their original specifications were somewhat short. These orders are being taken care of from warehouse stocks. Structural shapes are very slow. We quote structural shapes and steel bars at 1.80c. from warehouse. A large Southern railroad inquired last week for 2000 tons of billets, but it is not known if the order has been placed.

Old Material.—Dealers are feeling a little more encouraged over the outlook. The foundries have been buying more scrap lately, and there seems to be a general feeling that the rolling mills will soon be able to absorb their regular proportion. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices, f.o.b. at yards:

Per Gross Ton

Bundled sheet scrap	$6.00 to $6.50
Old iron rails	10.75 to 11.75
Relaying rails, 50 lb. and up	19.50 to 20.00
Rerolling steel rails	9.50 to 10.00
Melting steel rails	8.50 to 9.00
Heavy melting steel rails	8.25 to 8.75

Per Net Ton

No. 1 railroad wrought	$7.25 to $7.75
Cast borings	3.75 to 4.25
Steel turnings	3.75 to 4.25
Railroad cast scrap	9.00 to 9.50
No. 1 machinery cast scrap	9.50 to 10.00
Burnt scrap	5.75 to 6.25
Old iron axles	13.25 to 13.75
Locomotive tires (smooth inside)	8.50 to 9.00
Pipes and flues	5.25 to 5.75
Malleable and steel scrap	6.50 to 7.00
Railroad tank and sheet scrap	4.25 to 4.75

Buffalo

BUFFALO, N. Y., November 24, 1914.

Pig Iron.—Sales for the week by Buffalo district furnaces have aggregated not far from 150,000 tons of foundry and malleable, but principally foundry grades. This nearly or quite takes up all of the unsold product of all Buffalo furnace plants until April 1, including stocks on hand, at current low prices. Of this tonnage 108,000 tons was taken by the American Radiator Company, 70,000 tons being for use in its three Buffalo plants and the remainder for Bayonne and other points, and covers delivery through the first half of 1915. It is understood that this business was about equally distributed among the Rogers-Brown Iron Company, Buffalo Union Furnace Company and Wickwire Steel Company. A considerable proportion of the other 42,000 tons placed went to Eastern users. As a result of these heavy sales, there has been a still further advance in prices for first quarter and half beyond that noted last week, $13 to $13.25 now being the asking price for No. 2X. For prompt delivery $12.50 is now the minimum for any grade, running up to $13.50 for the higher silicon irons. Shipments on contracts are again going out in good volume. One of the largest producing interests of the district reports that on one day of the past week it shipped out the largest total of any day in its history. It is expected that the furnace of the Wickwire Steel Company, which was to have been blown out in a few days for an indefinite period, remains in blast, owing to the large orders booked. As there is so little iron for sale for the remainder of this quarter, we quote only for first quarter and first half 1915 delivery as follows, f.o.b. furnace:

No. 1 foundry	$13.25 to $13.50
No. 2 X foundry	13.00 to 13.25
No. 2 plain	13.00
No. 3 foundry	13.00
Gray forge	13.00
Malleable	13.00
Basic	13.25 to 13.75
Charcoal, regular grades and analysis	16.25 to 17.25
Charcoal, special grades and analysis	20.50

Finished Iron and Steel.—The majority of producers report that current quarter orders and specifications have been light, although one or two sellers report an increase over the previous week. Miscellaneous inquiry is a little better, with a few requests for prices for 1915 contracts. For cold-rolled shafting the principal demand is for export. An order has been booked by the Lackawanna Steel Company for 25,000 tons of open-hearth rails, heavy sections, from the New York Central Railroad for delivery early next year. The Oswego Construction Company, Oswego, N. Y., is low bidder on the 200 tons of bridge steel required for State Barge Canal, contract J, at Watkins, N. Y., and the American Bridge Company has the contract for 200 tons for a pavilion in Interstate Park near West Point, N. Y. All bids were thrown out on the Lockport high school, taking nearly 300 tons of steel, on account of the lowest bid overrunning the appropriation, and revised plans are being made. Plans have been completed for a bas-

cule bridge over the Buffalo River at Abbott road in this city, requiring about 300 tons. Bids will be taken when a bond issue is provided for.

Old Material.—A much better feeling is noted in the scrap-iron market this week. The advance in the price of pig iron has had a stiffening effect, and dealers are inclined to hold back on sales in most lines, anticipating a raise. Offers have been made for heavy melting steel for delivery over first quarter at $10 per gross ton, Buffalo, but no sales of consequence have been made at this figure. We quote dealers' selling prices as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$9.00 to $9.50
Low phosphorus steel	12.50 to 13.00
No. 1 railroad wrought scrap	9.00 to 9.50
No. 1 railroad and machinery cast	9.75 to 10.25
Old steel axles	11.00 to 11.50
Old iron axles	16.00 to 16.50
Old carwheels	10.00 to 10.50
Railroad malleable	8.50 to 9.00
Machine shop turnings	5.00 to 5.50
Heavy axles turnings	7.50 to 8.00
Clean cast borings	5.25 to 5.75
Old iron rails	10.50 to 11.00
Locomotive grate bars	8.00 to 8.50
Stove plate (net ton)	8.00 to 8.50
Wrought pipe	6.50 to 7.00
Bundled sheet scrap	5.75 to 6.25
No. 1 busheling scrap	7.00 to 7.50
No. 2 busheling scrap	5.00 to 5.25
Bundled tin scrap	10.00

Birmingham

BIRMINGHAM, ALA., November 23, 1914.

Pig Iron.—The volume of sales in the past ten days and inquiries for forward delivery have increased to an extent justifying more optimism than the Southern iron trade has felt for some time. The increase is comparative only and business is not yet approaching a normal status. One of the largest sales was 2000 tons for Eastern delivery and there was one of 1500 tons for Southern delivery. Several small lots of 100 to 300 tons for first quarter were sold at $10.25, but as a rule $10 is the price secured, whether for spot, first quarter or first half. That large tonnages for second half can be obtained at $10 is the general belief of the makers. A report that offerings of Alabama iron in Eastern territory, in competition with Buffalo, had been made under the $10 basis is denied, and the denial has color inasmuch as the Southern product could meet the lowest quoted Buffalo price without shading. There was one sale of several hundred tons of No. 4 at $9.50. The total business done for 1915 does not amount to a great deal, but there is sufficient to show that consumers are beginning to take hold. An inquiry for 1000 tons for Southern delivery is interesting the manufacturers to whom submitted, and the order will be placed this week. Inquiry for basic is more active than it has been for some time, with indications that sales of some value may be effected. The Alabama output is restricted to 16 furnaces. We quote, per gross ton, f.o.b. Birmingham furnaces (the higher figures being for small lots for 1915 delivery), as follows:

No. 1 foundry and soft	$10.50 to $10.75
No. 2 foundry and soft	10.00 to 10.25
No. 3 foundry	9.50 to 9.75
No. 4 foundry	9.25 to 9.50
Gray forge	9.00 to 9.25
Basic	10.00 to 10.25
Charcoal	23.50 to 24.00

Cast-Iron Pipe.—There were no lettings of contracts in the pipe trade in the South of any consequence the past week. The leading interest is not operating above 50 per cent. in its great plant at Bessemer. Operations generally are not above 60 per cent. Soil pipe is slow and the output is restricted to 50 per cent. It is expected that there will be additional pipe shipments to the Pacific coast on the second sailing of the new Mobile-San Francisco line from Mobile, December 6. We quote, per net ton, f.o.b. pipe shop yards, as follows: 4-in., $20; 6-in., $18, with shadings on attractive specifications.

Coal and Coke.—The coal output as a whole is not over 50 per cent. of capacity. The Central Gas Company has filed a voluntary petition in bankruptcy, with liabilities of $292,000 and assets of $190,000. Ships at Southern ports continue to delay putting out. Coke is unchanged and dull, the small output, however, being cared for at the following quotations, per net ton, f.o.b. oven: Furnace coke, $2.75 to $2.90; foundry, $3 to $3.25, with the verey highest grade at $3.50.

Old Material.—Steel scrap has sold fairly well the past week, but general trade is stagnant. We quote per gross ton, f.o.b. dealers' yards, as follows:

Old iron axles	$13.00 to $13.50
Old steel axles	12.50 to 13.00
Old iron rails	12.00 to 12.50
No. 1 railroad wrought	8.50 to 9.00
No. 2 railroad wrought	7.50 to 8.00
No. 1 country wrought	8.00 to 8.50
No. 2 country wrought	7.00 to 7.50
No. 1 machinery cast	9.50 to 10.00
No. 1 steel scrap	8.00 to 8.50
Tram carwheels	8.50 to 9.00
Stove plate	8.00 to 8.50

The rail mill of the Tennessee Coal, Iron & Railroad Company at Ensley went on double turn for a week last Monday. Longer operations depend upon orders. The plants of the Gulf States Steel Company at Gadsden are on half turn. The American Steel & Wire Company's plant at Fairfield is operating at about 50 per cent. capacity.

New York

NEW YORK, November 25, 1914.

Pig Iron.—The selling by Buffalo furnaces in the past week has attracted attention widely, being on a scale that has not been equaled in many months. The total for the furnaces in that district is not far from 150,000 tons for this single week, and probably the movement in a little over two weeks has been about 200,000 tons. More than half of this was taken by one buyer. There were two contracts of 15,000 tons each in the fortnight; perhaps two of 10,000 tons each and several of 5000 tons, besides a number of 1000 tons. Much of the buying was for delivery in the Buffalo district, but there were large sales also in New England. For the most part $12 at Buffalo furnace for No. 2 X was the basis. This apparently was shaded in a few instances. The low prices made seem to have been due to the dropping out of the bottom of business with Canadian foundries. Shipments had been held up by a number of Canadian consumers in view of the general depression across the border. Eastern Pennsylvania furnaces shared to a small extent in the New England business, and their minimum price for the most part was $13 at furnace for No. 2 X. Deliveries on a good deal of the iron bought at Buffalo extend over the first half of 1915; in some cases they are limited to the first quarter. Buffalo furnaces have advanced their prices, and while $12.50 to $12.75 can be done to some extent on December iron, two sellers are asking $13 for deliveries in 1915. It is believed the Buffalo district furnaces are now quite well sold through February, with a considerable backlog for March and April. Several large buyers have still to cover for the first quarter of 1915, and it is understood that electrical and pump interests have not been included in the late movement. The Eastern Pennsylvania furnaces have sold very little basic iron. A 500-ton transaction in New Jersey is reported in which the price was close to $13.30 delivered. We quote Northern iron for tidewater delivery as follows: No. 1 foundry, $14.25 to $14.50; No. 2 X, $13.75 to $14.25; No. 2 plain, $13.75. Southern iron is quoted at $14.50 to $14.75 for No. 1 and $14.25 to $14.50 for No. 2.

Ferroalloys.—As to the arrangements being made, diplomatic or otherwise, to facilitate shipments of ferromanganese from England to this country, despite the recent embargo, importers are still much in the dark. English producers' representatives here have been advised of no such plans and report that shipments are still withheld, though some metal has arrived that started before the order became effective. One representative states that a cargo, loaded and ready to leave port, has been detained. It is a fact, however, that anxiety on the part of consumers in this country is entirely absent, there being practically no sales or inquiries. The nominal quotation is still $68, seaboard, at which price it is understood small quantities are available. Actual sales at higher prices are

not authenticated. The expectation of consumers that it will be possible later to buy under fairly satisfactory conditions in part accounts for the present inactivity. Ferrosilicon, 50 per cent., is unchanged at $71 to $73, Pittsburgh.

Finished Iron and Steel.—Marking time continues in domestic business and elusive and vague inquiries are still the rule in foreign possibilities. Barb wire appears still to be wanted in quantity but there are no actual offerings of railroad cars, though Russia has been mentioned as wanting about 8000. It is thought that Chile is to buy 250 freight cars and while the business may come to the United States, it is stated that it will be placed in Chile. It appears on good authority, in spite of denials, that the Illinois Southern has contracted with the Haskell & Barker Car Company for 300 box cars. The Boston elevated system has entered the market for 100 cars. In general lines, covering plates, shapes and iron and steel bars, improved sentiment is admitted with no tangible results in bettered order books but no evidences of softer prices. We quote mill shipments of steel bars, shapes and plates at 1.10c. to 1.15c., Pittsburgh, or 1.26c. to 1.31c., New York, and iron bars at 1.20c. to 1.25c., New York For lots from store we quote iron and steel bars at 1.80c. to 1.85c., New York, and plate and structural material at 1.85c. to 1.90c.

Cast-Iron Pipe.—The city of Lynn, Mass., opens bids to-day for 1550 tons of 4 to 6 in. The city of Dayton, Ohio, will open bids December 3 for 5500 tons of 3 to 36 in. The city of New Bedford, Mass., will also open bids December 3 for 1093 tons of 4 to 30-in. The pipe trade is waking up, as municipal lettings are increasing and private buyers are taking more interest. While an improvement is shown in this respect, prices continue low. An instance of this is found in the fact that the leading cast-iron pipe interest was the successful bidder at $19.60 per net ton, delivered, for 4000 tons of 60-in. pipe for which the Metropolitan Water and Sewerage Board, Boston, Mass., opened proposals November 23. It would appear that this bid was considerably lower than necessary, as the next lowest was $20.75. Carload lots of 6-in. continue to be quoted at $20 to $20.50 per net ton, tidewater.

Old Material.—No indication yet appears of the stagnant condition of the old material market breaking into something like activity. A few scattered inquiries are being received for small lots, but practically no business is being done in this district. Dealers are gaining rather than losing confidence, however, feeling that the heavier buying of pig iron must soon bring about a corresponding movement in scrap. Dealers' quotations are continued as follows, per gross ton, New York:

Old girder and T-rails for melting	$7.00 to	$7.25
Heavy melting steel scrap	7.00 to	7.25
Relaying rails	19.00 to	19.50
Rerolling rails	8.00 to	8.25
Iron car axles	14.00 to	14.25
Steel car axles	10.00 to	10.50
No. 1 railroad wrought	8.50 to	9.00
Wrought-iron track scrap	8.00 to	8.50
No. 1 yard wrought, long	8.00 to	8.50
No. 1 yard wrought, short	7.00 to	7.25
Light iron	3.00 to	3.50
Cast borings	5.50 to	6.00
Wrought turnings	5.00 to	5.50
Wrought pipe	7.00 to	7.25
Carwheels	8.50 to	9.00
No. 1 heavy cast, broken up	9.50 to	10.00
Stove plate	7.25 to	7.50
Locomotive grate bars	6.00 to	6.50
Malleable cast	6.50 to	7.00

Boston

BOSTON, MASS., November 24, 1914.

Old Material.—Dealers continue to express a confident feeling, expecting business to improve gradually for the remainder of the year. Buying by local iron foundries continues better as compared with a few weeks ago, but it is spotty. Prices are unchanged. The quotations given below are based on prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points which take Boston rates from eastern Pennsylvania points. Mill prices are approximately 50c. per ton higher.

Heavy melting steel	$7.00 to	$7.75
Low phosphorus steel	13.75 to	14.75
Old steel axles	12.75 to	13.25
Old iron axles	20.25 to	20.75
Mixed shafting	12.00 to	12.25
No. 1 wrought and soft steel	8.25 to	8.75
Skeleton (bundled)	5.50 to	5.75
Wrought-iron pipe	7.00 to	7.50
Cotton ties (bundled)	5.25 to	5.75
No. 2 light	3.25 to	3.75
Wrought turnings	5.00 to	5.50
Cast borings	5.00 to	5.25
Machinery cast	10.75 to	11.00
Malleable	7.50 to	7.75
Stove plate	7.00 to	7.50
Grate bars	5.25 to	5.50

St. Louis

ST. LOUIS, MO., November 23, 1914.

Pig Iron.—Sales have been quite numerous in small lots, practically all No. 2 Southern foundry and aggregating possibly 2000 tons. Some of the contracts are for delivery through the first half. Prices are firmer and the feeling is more optimistic than for some time.

Coke.—Sales have continued in carload lots and the specifications on contracts have been satisfactory. By-product coke continues to be sold at figures slightly below a competitive figure with the Connellsville product.

Finished Iron and Steel.—The increasing movement out of warehouse is regarded as a precursor of a disposition within a short time to contract for future delivery. Prices are on a basis now of 1.10c., Pittsburgh, for structural and bars, while tank plates are at about 1.07½c. for contract lots. In structural business the only noteworthy contract was 1200 tons for the Missouri Athletic Association building, which went to the Christopher & Simpson Company. Warehouse quotations stand as follows: Soft steel bars, 1.70c.; iron bars, 1.65c.; structural material, 1.80c.; tank plates, 1.80c.; No. 10 blue annealed sheets, 2c.; No. 28 black sheets, 2.55c.; No. 28 galvanized, black sheet gauge, 3.55c.

Old Material.—Further downward tendencies in prices are noted, but dealers are confident that there will be a change shortly, probably with the turn of the year. The only material moving is steel in small quantities. The only list out was for 200 tons from the St. Joseph & Grand Island. We quote dealers' prices, f.o.b. St. Louis, as follows, these being really nominal:

Per Gross Ton

Old iron rails	$10.00 to	$10.25
Old steel rails, rerolling	9.50 to	10.00
Old steel rails, less than 3 ft.	9.00 to	9.50
Relaying rails, standard section, subject to inspection	21.00 to	23.00
Old carwheels	10.00 to	10.25
No. 1 railroad heavy melting steel scrap	8.25 to	8.50
Shoveling steel	7.50 to	8.00
Frogs, switches and guards cut apart	8.25 to	8.50
Bundled sheet scrap	4.25 to	4.50

Per Net Ton

Iron angle bars	$9.50 to	$10.00
Steel angle bars	8.00 to	8.25
Iron car axles	15.00 to	15.25
Steel car axles	10.00 to	10.25
Wrought arch bars and transoms	10.00 to	10.25
No. 1 railroad wrought	7.25 to	7.50
No. 2 railroad wrought	7.00 to	7.25
Railroad springs	7.50 to	7.75
Steel couplers and knuckles	7.75 to	8.00
Locomotive tires, 42 in. and over, smooth	8.25 to	8.75
No. 1 dealers' forge	7.00 to	7.25
Mixed borings	3.50 to	3.75
No. 1 busheling	6.75 to	7.00
No. 1 boilers, cut to sheets and rings	5.25 to	5.75
No. 1 railroad cast scrap	8.50 to	9.00
Stove plate and light cast scrap	7.00 to	7.25
Railroad malleable	6.50 to	6.75
Agricultural malleable	6.00 to	6.25
Pipes and flues	5.00 to	5.50
Railroad sheet and tank scrap	5.00 to	5.25
Railroad grate bars	6.25 to	6.50
Machine shop turnings	4.25 to	4.50

The employees at the blast furnace of the Northern Iron Company, Standish, N. Y., recently passed a subscription paper for the Belgian relief fund, resulting in a total contribution of $165.50, which was sent to the Belgian Relief Committee in New York. It was stipulated that no contribution should exceed $1, and in practically every case that amount was given. The workmen of several nationalities participated.

British Confidence Stronger

Pig Iron Higher—Low Ferromanganese Sale—Dominion Steel Cutting Prices

(*By Cable*)

LONDON, ENGLAND, November 25, 1914.

Pig iron is higher. There is a better feeling regarding war and finance and confidence is much stronger industrially. Home deliveries of pig iron are good and trade is distinctly better. Ore is strong. Furnaces active are 168, against 181. English ferromanganese afloat has been sold at $62, c.i.f. Baltimore. Tin plates are dull and easy. Resales of tin plates are being forced by export prohibitions. Steel is firmer on the whole and good orders are being awarded for shipbuilding sections, with fair placings of new steamers. The Dominion Steel Corporation is cutting for business and has taken a small Irish order for rails, while the United States Steel Corporation is credited with capturing small tonnages for Servia and Greece. Stocks of pig iron in Connal's stores are 103,776 tons, against 103,782 tons last week.

We quote as follows:

Tin plates, coke 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 12s. 7½d. ($3.07), against 12s. 9d. ($3.10) last week.

Cleveland pig-iron warrants (Tuesday), 51s. 1½d. ($12.44), against 49s. 6d. ($12.04) last week.

No. 3 Cleveland pig iron, makers' price, f.o.b. Middlesbrough, 51s. 9d. ($12.59), against 50s. ($12.17) last week.

Steel black sheets, No. 28, export, f.o.b. Liverpool, £8 10s. ($41.36).

Steel ship plates, Scotch, delivered local yards, £6 15s. ($32.84).

Steel rails, export, f.o.b. works port, £6 2s. 6d. ($29.80).

Hematite pig iron, f.o.b. Tees, 65s. ($15.82), against 62s. 6d. ($15.21) last week.

Sheet bars (Welsh), delivered at works in Swansea Valley, £4 15s. ($23.12).

Steel joists, 15 in., export f.o.b. Hull or Grimsby, £6 2s. 6d. ($29.80).

Steel bars, export, f.o.b. Clyde, £6 15s. ($32.84).

Many Vessels Under Construction and Demand for Army and Navy is Heavy

LONDON, November 13, 1914.

It requires the exercise of a considerable stretch of imagination to picture the iron and steel trades as anything but quiet, but really taking everything into account things are not so bad. All round, of course, the labor force is reduced by army needs, but in some branches of manufacture the works are swamped with orders, and there is an enormous circulation of money in connection with the provision of ammunition stores and equipment of all kinds for the army in the field. Further than this the shipyards are full up with work, and are turning out new war vessels at a rate which would make the world's builders' eyes open wide if they knew. This shipyard activity accounts for an enormous tonnage of material of one sort and another, for not only is steel wanted but also copper and all other metals, so that to no unimportant extent the slackness of private demands for metals and metal goods is compensated by the big demand on account of Government orders.

As far as pig iron is concerned the trade passing shows little elasticity. Some business is being done for shipment, but nothing like what should be about if things were even moderately good. There has been a shade more doing, however, on account of the home trade.

NO "AMERICAN INVASION"

The steel trade is inanimate as a rule, certainly so far as merchant qualities are concerned. There is a lot of rigmarole written in the daily papers alleging an "American invasion" of steel. It may be so, but personally all my endeavors to locate it have failed. America is selling some material, but the total business in no way justifies the use of such a term as "invasion." Finished steel is being sold for shipment from the United States to England and Scotland, but not in quantities calling for any special comment. There was a lot of talk recently as to large sales of American semi-finished steel for export, but it was largely unjustified. The entire tone of the steel market apart from certain specialties is poor. In the rail trade hardly anything is doing and of the few inquiries out part are for markets to which nobody would care to ship at present. Greece, Roumania and Brazil, for instance.

Pittsburgh

PITTSBURGH, PA., November 24, 1914.

A leading steel company has notified its managers of sales throughout the country that they are at liberty to take contracts for the remainder of this year and through first quarter of 1915 at present prices. They are also authorized to meet the market, so that a fairly vigorous selling campaign on finished material may probably start in a short time at prices that are ruling now or perhaps slightly lower. It has been concluded that sentiment alone will not put up prices or sustain the market. The policy of several of the leading steel concerns from now on will be to sell freely through first quarter at the best prices that can be obtained. A pleasing feature of the situation is the continued heavy foreign inquiry for steel rails, billets, sheet bars, barb and plain wire, wire nails, sheets, tin plates and other products. A large amount of such business is under negotiation. Foreign orders are being placed right along. Export sales of barb wire and wire rods have been heavy, and a local interest has taken 500 tons of cold-rolled strip steel for shipment to Russia. Market sentiment is much better. Some large projects, held up when the European war started, will now be taken up again as financial conditions have improved. The situation generally has a more encouraging aspect than at any time for several months.

Pig Iron.—More active inquiries are in the market than for some time, and some large business in basic has been closed. The American Steel Foundries has bought from a Mahoning Valley furnace interest 5000 tons of basic for delivery at its Alliance works, and 5000 tons for its Sharon plant. These sales were at $12.75, delivered, the Alliance iron netting the seller $12.17 at furnace, and the Sharon iron about $12.50 at furnace, or slightly less. A Shenango Valley furnace interest has also sold 5000 tons of basic to the same consumer at $12.50 at furnace for delivery either to Sharon or Alliance. The General Electric Company is reported to be in the market for 10,000 to 20,000 tons of basic. Other inquiries are out for basic in 3000 to 5000 tons lots. It is doubtful whether $12.50 could be shaded, with reports that one furnace interest has refused to sell for first quarter at that price. The market on Bessemer iron is firmer, and $13.75 at furnace is now regarded as minimum, with a sale of 300 tons reported for delivery at Washington, D. C., at $14 at seller's furnace. We also note a sale of 1000 tons of malleable Bessemer at $12.75 at furnace. We now quote Bessemer iron at $13.75; basic, $12.40 to $12.50; malleable Bessemer, $12.75; No. 2 foundry, $12.75 to $13; gray forge, $12.50, all at Valley furnace, with a freight of 95c. a ton for delivery in the Cleveland or Pittsburgh districts.

Billets and Sheet Bars.—It is said that a fairly large lot of billets has been sold for delivery to England, but no details can be obtained. There is practically no new domestic demand, and prices seem to be weak. We quote Bessemer and open-hearth billets at $19, and Bessemer and open-hearth sheet bars $19.50, f.o.b. maker's mill, Youngstown; Bessemer and open-hearth billets, $19, and Bessemer and open-hearth sheet bars, $20, f.o.b. maker's mill, Pittsburgh. Forging billets are quoted at $24 for sizes up to but not including 10 x 10 in., and for carbons up to 0.25, the regular extras being charged for larger sizes and higher carbons. Forging billets running above 0.25 to 0.60 carbon take $1 per ton extra. Axle billets are quoted at $21 to $22, f.o.b. Pittsburgh.

Ferroalloys.—The ferromanganese market is firmer, and $68, seaboard, for English is still being quoted. Dealers who can ship promptly from stock are quoting $70, and in some cases $75, but no sales at these prices are reported. We quote 50 per cent. ferrosilicon, in lots up to 100 tons, at $73; over 100 tons to 600 tons, $72; over 600 tons, $71, delivered in the Pittsburgh district. On 10 per cent. ferrosilicon the quotation is $19; 11 per cent., $20, and 12 per cent., $21, f.o.b. cars Jackson County, Ohio, or Ashland, Ky., furnace. We quote 20 per cent. spiegeleisen at $25 at furnace. We quote ferrotitanium at 8c. per lb. in carloads; 10c. in 2000-lb. lots and over, and 12½c. in less than 2000-lb. lots.

Steel Rails.—It is reported that an order for 30,000 tons of standard section steel rails for shipment to Australia or Russia has been placed in this country, but confirmation of this cannot be obtained here. Chile has an inquiry for 5000 tons of standard sections, the Norwegian State Railways is asking prices on 25,000 tons or more, and the French Government is inquiring for light rails, but the tonnage has not been disclosed. The Atchison, Topeka & Santa Fé Railroad has placed an order for 6500 tons of tie-plates with the Rail Joint Company, to be made by the Illinois Steel Company at Chicago. Few domestic orders for standard sections are being placed, and the demand for light rails is also dull, running only 1200 to 1500 tons per week. We quote standard section rails, made of Bessemer stock, at 1.25c., and of open-hearth, 1.34c., f.o.b. Pittsburgh. We quote light rails as follows, in carload lots: 8 and 10 lb. sections, 1.275c.; 12 and 14 lb., 1.225c.; 16 and 20 lb., 1.175c.; 25, 30, 35, 40 and 45 lb. sections, 1.125c. Extras over the above prices are as follows:

Bond drilling, one hole	$0.045 per 100 lb.
Bond drilling, two holes	0.090 per 100 lb.
Bond drilling, one hole in flange	0.090 per 100 lb.
Bond drilling, two holes in flange	0.180 per 100 lb.
All 30 ft. and special lengths, down to but not including 12 ft.	0.045 per 100 lb.
Special lengths, 12 ft. and under	0.090 per 100 lb.
Notching	0.025 per 100 lb.

The above prices are for carload lots, the usual differentials being allowed for large lots.

Structural Material.—Little new work has been placed in the past week and inquiry is light. The Riter-Conley Mfg. Company has taken about 200 tons for steel buildings for the new plant of the Alloy Steel Forging Company, Carnegie, Pa., and the Cambria Steel Company has booked 450 tons for grade crossing work for the Pennsylvania Railroad at Johnstown, Pa. We quote beams and channels up to 15-in. at 1.10c., f.o.b. Pittsburgh, for delivery over remainder of this year and first quarter of 1915. On a very desirable order for prompt shipment, 1.05c. could be done.

Plates.—In a few days the Clover Leaf Railroad will send out inquiries for 1800 box cars with steel underframes. It is said there is a great shortage in box cars, and it is believed that the railroads will soon be more liberal buyers. The general demand for plates is dull, and operations are not more than on about a 25 per cent. basis. We quote ¼-in. and heavier plates at 1.05c. to 1.10c., f.o.b. Pittsburgh.

Wire Rods.—A Youngstown interest is reported to have taken an order for 1500 tons of wire rods for shipment to England at about $24.40, f.o.b. Youngstown. Two local mills are selling rods for export right along at prices that net about $24.50, Pittsburgh. The domestic demand is dull and specifications from consumers are light. We quote domestic Bessemer, open-hearth and chain rods at $25, f.o.b Pittsburgh, but for a desirable order and prompt shipment this price would be shaded.

Skelp.—There is some foreign inquiry, with a fair amount of business under negotiation. It is estimated that since the war broke out orders for 10,000 to 15,000 tons, mostly grooved steel skelp, have been placed here for shipment to England and other foreign countries. We quote: Grooved steel skelp, 1.10c. to 1.15c.; sheared steel skelp, 1.15c. to 1.20c.; grooved iron skelp, 1.50c.; sheared iron skelp, 1.50c. to 1.60c., delivered to consumers' mills in the Pittsburgh district.

Tin Plate.—Reports of demoralization in prices are denied by the manufacturers, who say that the present situation is stronger than it was two weeks ago. The official price of tin plate for 1915 delivery will likely be given out within a week, and is generally expected to be $3.25 per base box, f.o.b. Pittsburgh. In fact, some of the large consuming trade on the Pacific coast has been covered for first quarter at $3.25 per base box, and in some cases higher. Relatively low prices are being made for quick shipment out of stock. The general market on 100-lb. 14 x 20 coke plates for prompt delivery from stock is $3.25 per base box, but in some cases this has been shaded about 10c. per box. We quote 100-lb. 14 x 20 terne plates at $3.10 to $3.20, f.o.b. Pittsburgh.

Sheets.—The demand for sheets is only for small lots. It is said that none of the mills will sell at present prices for delivery through first quarter. Mill operations continue to range from about 40 to 50 per cent. We quote No. 28 Bessemer black sheets at 1.85c. to 1.90c.; No. 28 galvanized, 2.85c. to 2.90c.; Nos. 9 and 10 blue annealed, 1.35c. to 1.40c.; No. 30 black plate, tin-mill sizes, H. R. & A., 1.95c.; No. 28, 1.90c.; Nos. 27, 26 and 25, 1.85c.; Nos. 22 to 24, 1.80c.; Nos. 17 to 21, 1.75c.; Nos. 15 and 16, 1.70c. The above prices are for carload lots, f.o.b. at maker's mill, jobbers charging the usual advances for small lots from store.

Wire Products.—The foreign demand for barb wire and wire products is heavier. A Youngstown mill has taken 2000 tons of barb wire for delivery to England, shipments on which have started. There is also some foreign inquiry for plain annealed wire and wire nails. Two local mills are running to utmost capacity on barb wire and fully 75 per cent. or more of the output is going abroad. The domestic demand for wire nails is dull and specifications are only fair. Prices on wire products have declined and we now quote wire nails at $1.55; plain annealed wire, $1.35; galvanized barb wire and fence staples, $1.95; painted barb wire, $1.60, all f.o.b. Pittsburgh, freight added to point of delivery, terms 30 days net, less 2 per cent. off for cash in 10 days. We quote steel cut nails at $1.60, f.o.b. Pittsburgh, in carload lots. We quote woven wire fencing at 73 per cent. off in carload lots, 72 on 1000-rod lots and 71 on smaller lots, all f.o.b. Pittsburgh.

Shafting.—The new demand does not represent more than 25 per cent. of capacity. Specifications against contracts are not heavy and general conditions in this trade are unsatisfactory. We quote cold-rolled shafting at 66 to 67 per cent. off, depending on the order, delivered in base territory.

Iron and Steel Bars.—The recent order from France for 3¼-in. steel rounds amounted to about 22,000 tons. Of this, about 10,000 tons was taken by the Carnegie Steel Company, practically the same amount by the Jones & Laughlin Steel Company, and another local mill about 2000 tons. These bars, which are of open-hearth steel, of 0.35 to 0.50 carbon, will be shipped in 10-ft. lengths to either Havre or Bordeaux, and will be machined by the French government. Other business of this character for foreign delivery is pending. The domestic demand for both iron and steel bars is quiet. One leading bar maker has announced that it will sell for delivery through first quarter on the 1.10c. basis. For delivery in second quarter, 1.15c. is asked. There is a fairly good demand for reinforcing steel bars for concrete purposes. We quote merchant steel bars at 1.10c. for delivery over remainder of the year and first quarter of 1915. On a desirable order for prompt shipment, 1.05c. could be done. We quote common iron bars at 1.15c., f.o.b. Pittsburgh.

Railroad Spikes.—There is practically no new buying by the railroads, and specifications are dull. We quote standard sizes of railroad and boat spikes at $1.35 to $1.40, and smaller railroad and boat spikes at $1.45 to $1.50 per 100 lb. in carload and larger lots, f.o.b. Pittsburgh.

Nuts, Bolts and Rivets.—There is no betterment in demand for these products. We quote structural rivets at 1.45c. and boiler rivets at 1.55c. in carload lots, small lots taking an advance of about 10c. Discounts on nuts and bolts are as follows in lots of 300 lb. or over, delivered within a 20c. freight radius of maker's works:

Coach and lag screws	80 and 5% off
Small carriage bolts, cut threads	80% off
Small carriage bolts, rolled threads	80 and 5% off
Large carriage bolts	75 and 5% off
Small machine bolts, cut threads	80 and 5% off
Small machine bolts, rolled threads	80 and 10% off
Large machine bolts	75 and 10% off
Machine bolts, c.p.c. & t nuts, small	80% off
Machine bolts, c.p.c. & t nuts, large	75 and 5% off
Square h.p. nuts, blank and tapped	$6.30 off list
Hexagon nuts	$7.20 off list
C.P.C. and r sq. nuts, blank and tapped	$6.00 off list
Hexagon nuts, ⅝ in. and larger	$7.20 off list
Hexagon nuts, smaller than ½ in.	$7.80 off list
C.P. plain square nuts	$5.50 off list
C.P. plain hexagon nuts	$5.90 off list
Semi-fin. hex. nuts, ½ in. or under	85, 10 & 10% off
Semi-fin. hex. nuts, ⅝ in. and larger	85 & 5% off
Rivets, 7/16 x 6½, smaller & shorter	80, 10 & 5% off
Rivets, tin plated, packages	80, 10 and 5% off
Rivets, metallic tinned, packages	80, 10 and 5% off
Standard cap screws	70, 10 and 10% off
Standard set-screws	75, 10 and 10% off

Hoops and Bands.—New orders are light. We quote steel bands at 1.10c., and steel hoops at 1.25c., f.o.b. Pittsburgh, for remainder of this year and first quarter. On desirable orders these prices would be shaded about $1 a ton.

Merchant Steel.—A domestic mill has received a contract for 500 tons of cold-rolled strip steel for delivery to Russia. Other foreign inquiries are in the market. The new demand for seasonable steels is fair. Prices are more or less uneven, depending on the size of the order and the deliveries wanted. Quotations on small lots for prompt shipment are about as follows: Iron finished tire, ½ x 1½ in. and larger, 1.30c., base; under ½ x 1½ in., 1.45c.; planished tire, 1.50c.; channel tire, ¾ to ⅞ and 1 in., 1.80c. to 1.90c.; 1⅛ in. and larger, 1.90c.; toe calk, 1.90c. to 2c., base; flat sleigh shoe, 1.65c.; concave and convex, 1.70c.; cutter shoe, tapered or bent, 2.20c. to 2.30c.; spring steel, 1.90c. to 2c.; machinery steel, smooth finish, 1.70c. We quote cold-rolled strip steel as follows: Base rates for 1 in. and 1½ in. and wider, under 0.20 carbon, and No. 10 and heavier, hard temper, 3.25c.; soft, 3.50c.; coils, hard, 3.15c.; soft, 3.40c.; freight allowed. The usual differentials apply for lighter sizes.

Standard Pipe.—It is now close to the end of the year, when the demand for tubular goods always shows a falling off, as jobbers and consumers desire to have light stocks when taking inventories. The discounts on the iron pipe card, which has stood since June 2, 1913, are not being strictly observed. The new discounts on steel pipe are well maintained.

Boiler Tubes.—The demand is very dull both for locomotive and merchant tubes. Regular discounts have not been observed for some months, prices depending on the order and the deliveries wanted.

Old Material.—There is no new buying of scrap by consumers, some of whom are carrying heavy stocks. A sale of 250 tons of cast-iron borings is reported at about $7.75, delivered, and also a sale of about 500 tons of select heavy steel melting scrap at about $10 delivered. For delivery to consumers' mills in the Pittsburgh and other consuming districts that take Pittsburgh freights, dealers quote about as follows:

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen, Midland and Pittsburgh delivery	$10.00
Compressed side and end sheet scrap	$9.00 to 9.25
No. 1 foundry cast	10.50 to 10.75
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district	8.00 to 8.25
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	11.75 to 12.00
No. 1 railroad malleable stock	10.00 to 10.25
Railroad grate bars	9.00 to 9.25
Low phosphorus melting stock	13.00
Iron car axles	18.75 to 19.25
Steel car axles	13.25 to 13.75
Locomotive axles, steel	19.75 to 20.25
No. 1 busheling scrap	9.00 to 9.25
No. 2 busheling scrap	6.00 to 6.25
Machine shop turnings	7.25
Old carwheels	10.75 to 11.00
Cast-iron borings	7.75
*Sheet bar crop ends	10.50 to 10.75
Old iron rails	12.75 to 13.00
No. 1 railroad wrought scrap	10.75 to 11.00
Heavy steel axle turnings	8.25 to 8.50
Heavy breakable cast scrap	10.25 to 10.50

*Shipping point.

Coke.—While there are some inquiries for blast-furnace coke for delivery in first half, these are regarded as feelers. We continue to quote standard makes for prompt shipment of furnace coke at $1.50 to $1.60 per net ton at oven, and 72-hr. foundry coke at $1.90 to $2. Several makers of standard Connellsville furnace coke are quoting $1.75 for delivery in first half.

Metal Market

NEW YORK, November 25, 1914.

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York			Lead		Spelter	
Nov.	Lake	Electrolytic	Tin, New York	New York	St. Louis	New York	St. Louis
18	12.12½	12.00	32.00	3.70	3.60	5.15	5.00
19	12.25	12.12½	32.00	3.90	3.77½	5.20	5.05
20	12.37½	12.25	32.50	3.90	3.77½	5.20	5.05
21	12.37½	12.37½	.....	3.90	3.77½	5.25	5.10
23	12.62½	12.50	33.60	3.90	3.77½	5.25	5.10
24	12.62½	12.50	33.87½	3.90	3.77½	5.30	5.15

Copper has continued to advance, though the buying has tapered off. Tin is quiet but higher because of the scarcity of spot supplies. Lead has advanced, but is now less active. Spelter has advanced steadily, although there has been no heavy buying. Antimony is firmly held.

New York

Copper.—The good buying continued until November 20 when it began to taper off, which is not surprising in view of the heavy transactions of the previous few days, but the general belief is that while the market is now quiet it is on a sound basis and that sellers can afford to hold fast to the recent advance in view of the fact that consumers are comfortably supplied. On the contrary there are those who believe the market advanced too rapidly to be maintained. Information regarding exports cannot yet be had from the customs authorities, but they undoubtedly have been considerably restricted. The Italian ships have continued to refuse to accept copper for European shipment since the recent seizures by England. The quotation for electrolytic yesterday was 12.50c. cash, New York, there having been advances of ⅛c. almost every day since the last report. Lake has sold heavily also, and the stocks of some producers are believed to be pretty well exhausted.. The quotation for Lake yesterday was 12.62½c. On November 19 the base price of hot rolled sheet copper advanced ½c. to 17c. and on November 23 it advanced to 17½c.

Tin.—On Thursday and Friday of last week a good business was done in futures, but since then there has been but little buying, although consumers have continued to show interest in these positions. A willingness to buy is shown, providing bargain prices can be had. The principal feature, aside from the situation in future delivery metal, is the scarcity of spot stocks, which are not large and are held in but a very few hands. The quotation yesterday was 33.87½c. The quotation for December and January deliveries is about 32. An additional feature is the situation which some firms who traded in November tin now find themselves in. They sold short with the expectation of getting metal from the steamer Marquette, which is scheduled to arrive November 25 with 830 tons, to make good on deliveries. Doubt has developed, however, as to whether tin ex the Marquette will be available for November. The arrivals this month total 1530 tons, and there is affoat 2580 tons, including the 830 tons on the Marquette, due to-day, but not reported at this writing.

Lead.—The market was firm yesterday at 3.90c., New York, and 3.77½c., St. Louis. The largest interest made an advance of $4 per ton on November 18. The indications are that the announced price will be met by independent producers. The situation is similar to that in copper inasmuch as there have been heavy purchases and both sellers and consumers are in a comfortable position. Exports have been in good volume.

Spelter.—Despite a lack of domestic demand prices have advanced steadily, and 5.30c., New York, and 5.15c., St. Louis, is now quoted. Though figures are not available exports are known to have been good, and this, with a prospect of better activity on the part of the steel mills, has caused the strength.

Antimony.—The domestic market continues quiet, but quotations are sustained in the belief that domestic consumers will soon be seeking to buy. Further strength may be created by demand for antimony to be used in the manufacture of shrapnel shot, which is now interesting many American firms. Quotations continue at 17c. to 18c for Cookson's, 15c. to 16c. for Hallett's, and 13½c. to 14½c. for Chinese. Chinese in bond is offered at lower prices.

Old Metals.—The market is strong. Dealers' selling prices have been advanced and are now as follows:

	Cents per lb.
Copper, heavy and crucible	11.75 to 12.00
Copper, heavy and wire	11.25 to 11.50
Copper, light and bottoms	10.25 to 10.50
Brass, heavy	8.50 to 8.75
Brass, light	6.50 to 6.75
Heavy machine composition	10.75 to 11.00
Clean brass turnings	8.00 to 8.25
Composition turnings	9.25 to 9.50
Lead, heavy	3.65
Lead, tea	3.40
Zinc scrap	4.00

Chicago

NOVEMBER 23.—Copper prices continue to move up on the strength of steady buying and generally improved sentiment. Tin quotations, though covering a considerable range, also show an average advance. Lead and spelter values are likewise higher. There is no great demand for Cookson's antimony, which is doubtless the only explanation of the fact that prices are not materially higher. Old metal prices offered by dealers reflect the slightly stronger position of the market. We have revised quotations as follows: Casting copper, 12.50c.; Lake copper, 12.75c., for prompt shipment; small lots, ⅛c. to ¼c. higher; pig tin, carloads, 34.50c.; small lots, 37.50c.; lead, desilverized, 3.85c., and corroding, 4.10c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.15c.; Cookson's antimony, 18c. to 20c., for cask lots; other grades, 15c. to 17c. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 10.50c.; copper bottoms, 9c.; copper clips, 10c.; red brass, 9.50c.; yellow brass, 7c.; lead pipe, 3c.; zinc, 3.50c.; pewter, No. 1, 24c.; tinfoil, 28c.; block tin pipe, 28c.

St. Louis

NOVEMBER 23.—Marked activity prevailed in nonferrous metals the past week, particularly in lead and spelter, which have been in sharp demand; chiefly for export. The sales have been heavy. Lead closed today at 3.82½c.; spelter, 5.15c.; tin, 35½c.; Lake copper, 13½c.; electrolytic copper, 13¼c.; antimony, Cookson's, 18c. In the Joplin zinc ore market there was a strongly better tendency. Lead ore scored the heaviest advance and sold up to $47 per ton for 80 per cent. Miscellaneous scrap metals are quoted as follows: Light brass, 5c.; heavy yellow brass, 7c.; heavy red brass, 8c.; heavy copper and copper wire, 9c.; lead, 3c.; pewter, 20c.; tinfoil, 24c.; zinc, 3c.; tea lead, 3c.

Iron and Industrial Stocks

NEW YORK, November 25, 1914.

The New York Stock Exchange will re-open on Saturday, November 28, for public trading in bonds. The governors of the Exchange have decided that the time has come when it is both safe and expedient to take this step toward the re-establishment of ordinary financial operations. Trading in stocks is expected to follow in a few days thereafter, if conditions should be found propitious. The Exchange has now been closed for four months.

Dividend Declared

The New York Air Brake Company, regular quarterly, 1½ per cent., payable December 23.

The Brooks plant of the American Locomotive Company, Dunkirk, N. Y., reopens this week, starting on a considerable amount of repair work for which it has received an order from the Big Four Railroad. The construction of 12 new switching engines for the same road will also be taken in hand. The company also has sufficient work in sight to keep the plant running for some time thereafter.

Mammoth Freight Cars of the Future

At the meeting of the Railway Development Association held in Chicago November 10 and 11, E. W. Abbott, land commissioner of the Boyne City, Gaylord & Alpena Railroad, predicted the nearby advent of freight cars with two and one-half times the capacity of present equipment. In this type of car can be found the only solution, he said, for the increasing congestion on the trunk lines of the country. This will involve the adoption, particularly for the trunk lines between Chicago and New York, of an auxiliary 6-ft. standard roadbed in conjunction with the present track of 4 ft. 8 in. gauge, the former to be obtained by laying an extra rail 1 ft. 4 in. outside of one of the present rails. "The mammoth box car will be used for the vast bulk of carload freight," Mr. Abbott said. "It will save on handling, switching and hauling. It will be used only for freight destined to the big centers on the 6-ft. trunk lines. The operation of these cars will not interfere with the operation of the present standard car, which may be coupled up in the trains just the same, running on the 4 ft. 8 in. track, which will be left where it is."

The Edward G. Budd Mfg. Company, Philadelphia, which had contemplated the building of a new factory, has taken a lease for a term of years on a property which will accommodate its entire equipment under one roof. It is located at Twenty-fifth street and Hunting Park avenue, in that city, with railroad sidings affording connection with the Pennsylvania, Reading and Baltimore & Ohio systems. The building is of ample size, having an area of two acres on one floor. The location is ideal for securing a high class of labor and the facilities in other respects are of the best character. The company manufactures steel stampings of every description, including difficult shapes. It recently turned its attention to the manufacture of automobile bodies and trimmings and has found the demand for this class of work so urgent that it is running its factory night and day. With its increased facilities it is now in position to take additional work in interior trim for steam and electric railroad cars and similar purposes.

"Steel Castings" is the title of a 16-page publication, 6 x 9 in., of which Nos. 1 and 2, dated October and November, 1914, have been issued by the Tropenas Converter Company, 50 Church street, New York. In the first number the principal article is a reprint of a paper by G. Muntz on "Tropenas Converters and Electric Furnaces for the Manufacture of Steel Castings." No. 2 reprints the paper of A. F. Stirling Blackwood before the American Foundrymen's Association on "General Melting Characteristics of the Acid Converter Process." Illustrating the paper are views of the plant of the Michigan Steel Casting Company, of which Mr. Blackwood is vice-president.

The capital stock of Fried. Krupp, A. G., the great German steel company, with works at Essen, Buckau, Rheinhausen and Kiel, is to be increased from 70,000,000 marks ($16,660,000) to 250,000,000 marks ($59,500,000). The new stock will be taken by the Krupp family, as usual. This action was taken at a meeting of the directors, November 12, when a dividend of 12 per cent. was declared, against 14 per cent. last year. The directors also set aside $750,000 for the relief of the families of soldier employees, $500,000 for the employees' furlough fund and $250,000 for the pension fund.

The Youngstown Iron & Steel Company, Youngstown, Ohio, which will build an open-hearth steel plant near the Ohio Iron & Steel Company's furnace at Lowellville, Ohio, has made a 10-year contract with the latter for its supply of molten basic iron.

A Pennsylvania charter has been granted to the Hollingsworth Knife Company, Kane, Pa.; capital, $50,000; incorporators, H. Hollingsworth, H. W. Sweeley, James and W. W. McDade and R. A. Hill.

Mechanical and Civil Engineers
PITTSBURGH, PA.

Tar Vapor Recovery by Alternating Current

A plant for the precipitation of tar vapors from gas by the use of alternating electric current has been developed by F. W. Steere, Detroit, Mich. This is a distinct departure from the Cottrell process for the precipitation of matter suspended in gas, which requires a high-tension rectified current. In a paper read before the American Gas Institute at New York October 22 the author described a plant with a capacity of 30,000 cu. ft. of gas per hour erected at the Ford Motor Company's factory to clean producer gas.

The crude gas is forced through a pipe in which a high-tension alternating current is discharged between the central electrode and the walls. The gas is ionized and the tendency to recombination of the dissociated atoms produces a dense tar mist, which forms into drops. These drops are collected by a centrifugal tar extractor. In 1200 tests, using the rich gas from the first six or eight hours of the coking of the recovery oven, the best results were obtained with gas entering the ionizer at from 65 to 80 deg. C. (150 to 175 deg. F.). It was found that the naphthalene crystals were freed after the extraction of the tar, enabling them to be recovered in a clean white condition. The plant has now been in successful operation for several months and is operated by the regular employees.

The National Steel Rail Company, Pierce Building, St. Louis, Mo., has sold through its president, I. H. Cohn, about 10,000 tons of steel rails and accessories, 1500 tons going to the Vicksburg, Alexandria & Southern Railroad, 3000 tons to ex-Governor Haskell of Oklahoma, who is building the Oil Belt Terminal Railroad, 2500 tons to an interurban railroad in western Kansas and about 2800 tons for export to South America. This company has also been a heavy purchaser of new spikes, bolts and other track material.

The Firth-Sterling Steel Company, works at McKeesport, Pa., with sales agencies and warehouses in New York, Boston, Philadelphia, Chicago, San Francisco, Pittsburgh and Cleveland, has issued a beautiful facsimile of a bronze plaque setting forth in most striking phraseology what constitutes "Firth-Sterlingism" in the production of high grade tool steel. It is printed on heavy calendered paper, 11 x 14 in.

The Brillion Iron Works, Brillion, Wis., has been ordered by the Wisconsin Industrial Commission to pay $3583.19 to Herman Ariens, an employee, for the loss of both eyes in a foundry explosion. The act provides compensation of $3500 for the loss of both eyes, and the remainder is for medical attendance.

At a recent reorganization meeting of the stockholders of the Kramer Brothers Foundry Company, Dayton, Ohio, the following officers were elected: President, George H. Kramer; vice-president, B. H. Kramer; secretary and treasurer, E. F. Loges; assistant secretary and treasurer, Louise Kramer.

The Charles A. Strelinger Company has been given the exclusive agency for the sale of the Barnes drills (W. F. & John Barnes Company, Rockford, Ill.) in the Detroit territory, the arrangement going into effect November 18.

The Thew Automatic Shovel Company, Lorain, Ohio, which has been operating its plant at reduced capacity, has resumed full operations on an eight-hour basis and expects to continue running full during the winter.

Blast furnace E of the Bethlehem Steel Company at South Bethlehem, Pa., which has been idle for some months for repairs, was blown in last week.

The real estate and plant of the Roanoke Bridge Company, Roanoke, Va., will be sold at receiver's sale December 14, 1914.

Briquetting Ore at Mayville, Wis.

A correspondent of the Engineering and Mining Journal thus describes the results attending the briquetting of local iron ore at the blast furnaces of the Northwestern Iron Company, Mayville, Wis.:

A Gröndal briquetting plant was erected in 1911. It consists of four kilns, 195 ft. long and 6 ft. 6 in. wide. The ore briquettes well, making firm, strong briquettes, with an iron content of 56 per cent. and sulphur 0.01 per cent.—a great improvement over the crude ore in the iron and sulphur contents. The present production is 70 to 100 tons of briquettes per day per kiln. Coke gas is used as fuel.

The use of the briquettes has been beneficial to the furnace operations. A mixture of 60 per cent. of briquettes and 40 per cent. of Lake ore, instead of 60 per cent. of crude Mayville ore and 40 per cent. of Lake ore, showed a reduction in coke consumption of 200 lb. per ton of pig iron, while the production of iron has been increased by 30 to 40 tons per day. The quantity of flue dust has been greatly reduced; what is made is sintered by the Greenawalt process.

The Rowe Calk Company, Hartford, Conn., has secured the exclusive contract from the French government for removable horseshoe calks and now has under way the manufacture of 50,000,000 to be used by the allied armies in France and Belgium the coming winter. These calks were adopted by representatives of the French government who came to this country for the purpose of making an investigation of the various kinds manufactured here. The company has doubled its plant once and is now doubling it again, running the entire capacity 24 hours per day. The enlargement will make the capacity 150,000,000 removable horseshoe calks per year and, it is claimed, that the company will then be the largest manufacturer of that article in the world.

An important point in employers' liability under the Wisconsin workmen's compensation act has just been decided by a local court. In effect the decision is that an employee who stops to rest, or who takes refuge at odd intervals to get warm and meanwhile meets with an accident, has not divested himself of the character of an employee and is therefore subject to the compensation laws. G. Kretiodick, employed at the Mayville plant of the Northwestern Iron Company, was waiting for cars to be discharged and sat down to warm himself when he was struck and injured. The Wisconsin Industrial Commission awarded the employee the stated compensation provided by the law and the court now affirms the commission's action.

The war has made it so difficult for the Southern Aluminum Company to obtain funds that it has discontinued its construction work, says the Engineering and Mining Journal. The work was well along; the powerhouse was nearly up; 35,000 cu. yd. or more of concrete had been laid on the big dam; the electrode factory was nearly completed, and work had begun on the purifying plant.

The Chicago, Milwaukee & St. Paul has ordered 9 electric freight and 3 electric passenger locomotives from the General Electric Company. The Russian government railroads, reported last week to have ordered 30 locomotives from the Baldwin Locomotive Works, are said to be considering the purchase of 100 more.

The W. N. Durant Company, 655-665 Buffum street, Milwaukee, Wis., manufacturer of counting and computing machines, etc., has filed an amendment to its articles of incorporation to change its name to Durant Mfg. Company. H. O. Winkler is president and treasurer and William K. Winkler is secretary.

The Alan Wood Iron & Steel Company blew out one Swedeland, Pa., furnace last week, and both are now idle.

OBITUARY

HENRY M. SCIPLE, Havana, Cuba, importer of American machinery, died November 10, aged 69 years. Until two years ago he was senior member of H. M. Sciple & Co., machinery dealers, Philadelphia, and for many years managed the Sciple Pump Company in that city, of which he was the founder.

CHRISTIAN N. SEIDEL, proprietor of the Standard Boiler Works, Lebanon, Pa., died November 16 from heart disease, aged 73 years.

PERSONAL

F. A. Geier, president Cincinnati Milling Machine Company, Oakley, Ohio, delivered an address to the Cincinnati Engineers' Club, November 19, on "Cincinnati as a Machine-Tool Center."

A. E. Seelig is now general sales manager of the Kerr Turbine Company, Wellsville, N. Y. For some time he had been sales manager of the machine-tool department of Schuchardt & Schutte.

Ellsworth Haring has terminated his connection with Hermann Boker & Co., New York City, after 16 years of service. He has organized a business in tool steel and special lines, with a temporary office at 684A Hancock street, Brooklyn, N. Y. For several years he has devoted most of his time to tool steel, including its heat treatment and practical applications.

Henry J. Weber, formerly of the Weber Foundry Company, Cincinnati, Ohio, has been appointed secretary of the Wessling Brothers Foundry Company, of the same city.

George A. Marting, formerly with the Stedman Foundry & Machine Company, Aurora, Ind., has accepted a position with the Bonney-Floyd Company, Columbus, Ohio.

H. A. Beach has been appointed secretary of the Wing Foundry Company, Columbus, Ohio.

F. W. Biehl has resigned as secretary-treasurer of the Galion Iron Works Company, Galion, Ohio.

John F. Williams has been made master mechanic of the Deforest Sheet & Tin Plate Company, Niles, Ohio.

John Bindley, first vice-president of the Pittsburgh Steel Company, Pittsburgh, Pa., recently made an inspection trip of the ore properties of that company on the Mesaba range.

S. A. Richards, superintendent of the blast furnace of the Struthers Furnace Company, Struthers, Ohio, has resigned, effective January 1. His successor is L. H. Baldwin, formerly assistant superintendent.

B. Elshoff recently resigned as superintendent of the electrical department of the Canadian Westinghouse Company, Ltd., to become works manager of the Diehl Mfg. Company, Elizabeth, N. J.

Dr. J. A. L. Waddell and John Lyle Harrington announce the dissolution of the firm of Waddell & Harrington, consulting engineers, Kansas City, Mo. The firm will conduct business as usual till the conclusion of its affairs in July, 1915, except that it is accepting no new commissions. Dr. Waddell will give his attention to special engineering and financial matters and to important advisory work. Mr. Harrington will be joined by the firm's associate engineers, E. E. Howard and Louis R. Ash, in the establishment of the new firm of Harrington, Howard & Ash, consulting engineers, Orear-Leslie Building, 1012 Baltimore avenue, Kansas City.

Charles C. Chopp has severed his connection with the Glidden Varnish Company, and become associated with the executive department of the Tropical Paint & Oil Company, Cleveland, Ohio. In the period of approximately nine years that he was with the Glidden Company, Mr. Chopp was manager of its foreign department, purchasing agent and a member of the board of directors and executive committee.

German Iron and Metal Trades and the War

The London Ironmonger of November 7 contains statements as to various phases of war conditions in German industries, which are summarized as follows:

The output of German wire mills rose in September to about 55 per cent. of normal as compared with 30 per cent. in August.

The committee appointed by the War Metal Company announces that an investigation shows a plentiful supply of copper in Germany against a protracted war.

Deliveries of the Pig-Iron Syndicate in October were estimated at 40 per cent. of the allotments against 48 per cent. in September. The syndicate has advanced the price of pig iron by 5 marks for new business to December 31, incurring the decided displeasure of foundrymen who expected a reduction.

The Thyssen Steel Works at Hagendingen plan to start up their blast furnace as well as the steel plant and rolling mill if enough labor can be secured.

Vorwärts gives details of the conditions of employment in the German Metal Workers' Trade Union. On August 15, 110,198 men had been called out, and on October 3, 162,181. On August 15 the number of unemployed entitled to allowances was 72,446, or 19.2 per cent., and on October 3 this had fallen to 45,335, or 12.6 per cent. During the week ending August 15, 336,772 marks was paid in unemployment allowances, and in the week ending October 3, 311,259 marks. At the end of July the Union had 533,814 members, but on October 3 only 357,682, owing to mobilization. The highest percentage of unemployment (19.7) was reached on August 22. The total expenditure of the unemployment fund from August 3 to October 3 amounts to 3,173,429 marks.

Because the Siegerland Iron Ore Syndicate cannot ship its full output of iron ore for lack of cars and because the importation of manganese ore is difficult, a decided restriction in steel operations may result.

At a meeting of the German Spelter Syndicate, October 21, it was stated that stocks were large, but prices were being maintained because production was expensive. The question of the continuance of the International Spelter Syndicate was left uncertain. This syndicate only fixes production. French, British and Belgian works belong to it.

The Crane Company, Chicago, on November 6 filed in the United States District Court for the Northern District of Texas a suit to test the constitutionality of the Texas permit fee and franchise tax laws, in so far as they affect foreign corporations. A temporary restraining order is sought, also a permanent injunction against the defendant officials restraining them from instituting suit for the collection of franchise taxes and from canceling the plaintiff's permit to do business in Texas. It is claimed that the laws are unconstitutional in that they are a burden on interstate commerce and tax the company's property outside of Texas and deny the company due process of law. Of the total capital stock and surplus of over $25,000,000, only $301,179, it is stated, is situated in Texas.

The Wyman & Gordon Company, Worcester, Mass., manufacturer of forgings, has received a large order from an important maker of automobiles, for forged gears which previously had been purchased exclusively from the Krupp Company, Germany. The foreign product had proved so satisfactory in the past that the change was not made to the United States manufacturer until the war necessitated it. This is one of a good many cases of the transfer of business from foreign to American makers of high grade products.

National Founders' Association Meeting

(*Continued from page* 1241)

favored by the committee on safety and sanitation. This is made of chrome tanned leather; is made without extended soles, so that molten metal will have no place for lodgment; has a strap at the back forming a part of the shoe, so that there will be no likelihood of the trousers catching above the shoe level; and the shoes are sold at cost, at $1.75 to $1.85 per pair. So far 5000 pairs have been sold, and this, he said, without salesmen trying to effect large sales.

He described the quick removal type of canvas leggings, sold at $1 per pair; and also without special solicitation had been disposed of to the amount of 1235 pairs. He explained also the type of safety goggles favored by the committee and already described in these columns. He mentioned at some length the investigation now under way to discover the efficacy of a new glass, said to give unquestioned protection against the electric arc.

NEW WELDER'S HELMET

He described an open wood box-form of helmet for use by the electric welder. It is built of 3/16 in. wood and weighs 3 lb. In the front it has the glass window for vision and protection of the operator's eyes. The wood box protection is proposed as not having the objection that it will get hot, besides being relatively light. He also briefly referred to a respirator for the sand blaster that is now being tested.

He exhibited the block letter signs and metal sign standards for use out of doors. He indicated how the latter are used to point out the source of danger and allow for the use of a red flag where required and a red lantern at night, all of which has been referred to in these columns. Of the block danger sign he said 40,000 had been sold. He then described the first-aid-to-injured jar which was shown at Chicago, selling for $5.50.

THE NEW STRETCHER

The stretcher consists of a wire mesh bed carried by two parallel tubes and provided with folding metal legs, so that the stretcher may be supported slightly above ground level and inclined from the head end or vice versa, as may be needed for the comfort of the injured person. It may be folded into small proportions when not in use. Mr. Alexander also indicated that in going through small vertical openings, the stretcher by being wrapped more or less around the injured person, affords an easy means for getting from one level to another through a restricted opening.

He brought out that J. H. Schwacke, William Sellers & Co., Philadelphia, had found in his foundry that grease on the chains of cranes had not been good practice, resulting in a grinding action due to the dust and grit, and Mr. Alexander said that others are now duplicating this test, so that it may be there will be a change in practice. H. D. Miles, Buffalo Foundry & Machine Company, brought out that many do not favor the use of chains, but cables instead in connection with cranes. The exhibit covered also the use of a spirally wound paper tube, which may be fixed over shafting and which will not revolve should any one fall against the shafting, as one was able to learn from the working exhibit.

Finally Mr. Alexander explained the adoption of the word "Naso," standing for the National Affiliated Safety Organizations, to indicate apparatus and devices approved by the committee and representing jointly employers of 5,000,000 to 6,000,000 people.

Labor Combinations and the Clayton Act

The so-called Clayton anti-trust bill became law, by approval of the President, October 15. The chief inquiries made respecting its legal effect on labor combinations, James A. Emery discussed in part as follows: Does it exempt them from the operation of the Sherman act? Is it true that Federal courts have been prohibited from enjoining certain notorious acts heretofore illegal? Is it true that boycotts may not be enjoined and are persons who violate Federal injunctions entitled to demand a jury trial upon a charge of contempt, if the contempt is not committed in the presence of the court?

LABOR UNIONS NOT EXEMPT UNDER SHERMAN LAW

If Congress intended to exclude labor combinations from the anti-trust law, it is obvious that it must have intended to modify or amend the original Sherman act, but this both the House and Senate committee on the judiciary emphatically disclaim in the report which accompanied this bill. Moreover, the debates of the House disclose that the judiciary committee having charge of the bill refused the request of representatives of the American Federation of Labor to amend section 6 of the bill so that it would read that the anti-trust act did "not apply to" labor organizations, instead of the adopted declaration that they "shall not be construed to forbid the existence and operation" of such associations.

This section is intended to relieve what I believe to be the entirely unjustified and unfounded apprehension that the Sherman act has been construed to forbid the existence and operation, per se, of labor combinations operating in or remotely and incidentally affecting interstate commerce. Mr. Gompers has persisted in asserting that because a labor combination is not permitted to restrain and destroy trade through an interstate boycott, the right of such organization to exist is threatened. If a combination will not abandon its unlawful practice, that may be true, but a thief might with equal reason declare the law deprived him of life because it forbade him to commit larceny to support it. Labor organizations not only have not been exempted from the prohibitions of the Sherman act, but the remedies which private individuals have against them for violations of it have been very considerably enlarged.

QUESTION OF INJUNCTION PROHIBITIONS

Section 20 has been popularly presumed to embody revolutionary restrictions upon the injunctive relief which Federal courts have heretofore afforded against the most vicious illegal activities accompanying labor disputes. The most numerous classes of cases in which equitable relief in labor disputes has been indispensable to the protection of life and property are not suits between employers and employees, but suits between employers and ex-employees, or strikers, or third parties and strangers engaged in sympathetic strikes or boycotts, but none of these parties are included within the limitations of the section.

It is true that this section, like other parts of the law, is not free from ambiguous language, but our highest courts very properly assume that our legislators act with knowledge of past judicial decisions. The legislative history of this section, the circumstances under which it came into being, the careful scrutiny which it has received from the judiciary committee of both houses of two Congresses, and the language itself, viewed in the light of the repeated, definite and reemphasized decisions of our higher courts, can leave us in no doubt that whatever may have been the mind and will of isolated individuals, it was the judgment of Congress that it was politically expedited to give guarded declaratory expression to existing law.

THE QUESTION OF CONTEMPT CASES

The provisions relating to contempts of Federal courts are contained in sections 21 to 25, inclusive. The first conclusion which one draws from their consideration is that the contempts to which they are applicable are so limited in number that it is difficult to find any recorded cases to which, had they always been the law, they would with certainty apply. In two comparatively recent cases it is made clear that it is not the physical proximity or remoteness of an act from the court whose order is violated but the effect

of that act upon the administration of justice itself. It is very difficult to imagine a case of disobedience of the lawful order of a court which is not within this interpretation of the term an obstruction of justice, and therefore excluded from the procedure provided in the new law.

The power of the court to inflict penalties for contempt, heretofore confined to either the assessment of a simple fine or imprisonment, is now extended by section 22 so that a person convicted of contempt in a labor or other case may not only be imprisoned for 6 months and required to pay a maximum fine of $1000 to the United States, but he may be further fined whatever sum the court determines to be equal to the damage caused to the complainant or any other party, and if he fail to pay such fine he may be imprisoned until he does.

In expressing the conclusions I do, I would not have it understood that I believe the legislation to be either wise or necessary, or that I am unaware of ambiguous phraseology which invites litigation.

The Delusion of the Clayton Bill

"The subject of exaggerated claims and boastful assertions by labor leaders, uncorrected by those responsible for its enactment, and, indeed, to a considerable extent, given at least the color of corroboration by Delphic utterances of congratulation, the Clayton bill," declares James A. Emery, "creates in the minds of hundreds of well-intentioned workmen, deluded into the conviction that they have been the victims of judicial oppression, not only the belief that a great wrong which did not exist has been righted, but that privileges have been conferred which are not shared by other members of the community, and which caused the duped beneficiaries to believe themselves entitled to a special legal license in the pursuit of their purposes. When the courts interpreting the act may find it not to have granted these privileges, nor to have impaired or contracted the power of the judiciary to protect life and property, a great cry will go up from those who, deceiving others to advance themselves, will make worse an already bad situation by denouncing the courts for defeating the will of Congress.

"Every pretended concession of a political nature weakens the power of public men to justly refuse that which they ought not to even seem to give. Delusion, encouraged by concession to its error, and learning in time of the deceit practiced upon it, sees in that error justice refused, and thus is fortified in its determination to have that which never should be given. There is but one protection which will permanently insure against unjustifiable political concessions to this determined and aggressive movement to unionize commerce, industry and transportation by legislation, and that is a compact and systematic movement of business men, representing a fixed and intelligent determination to be no longer the defenseless and divided plaything of politics, but in justly exerting their dormant political power to secure and support courageous business representation in the national legislature."

HOW WELL INTENTIONED HAVE BEEN DELUDED

Thrown as a political sop to a demand without justification, it reflects without cause upon the conduct of courts, the authority and respect for which it lessens.

In amplification of this statement Mr. Emery concluded his address with remarks which have here been entitled "Delusion of the Clayton Bill."

Reports of Officers

President Barr's Report

In the past year foundry interests have suffered extensively in common with most of our great industries; first, as a result of disturbing and unfortunate tariff readjustments, and, finally, by the great European catastrophe, which appalls all mankind. As in previous years, business of all kinds has been attacked repeatedly by radical politicians, misguided social workers, Socialistic labor leaders and selfish men of leisure, but there are many indications that a slight change for the better has come. Recent articles from careful thinkers are voicing the opinion that there is less excuse for the labor union than ever before, in that manufacturers are continually applying advanced ideas and methods for the safety, health, convenience and advancement of all employees. Indicative of fairness to corporations is the evidence of discernment by the public in the State of Missouri, who, at the last election, by referendum ballot repealed the full-crew bill.

In reference to the much discussed and frequently misunderstood South American trade extension, a word relative to the foundry prospects may not be amiss. American foundries will be benefited directly only in so far as they furnish castings for American builders of machinery, rolling stock and mechanical appliances. There need be no fear of local foundry competition, for nowhere in South America are found both ore and coal of the proper character for the manufacture of castings in adjacent accessible localities. It is also true that plans have already been made for the transportation of ore from Chili to America to be returned in manufactured form.

Mine Strikes

Two important labor problems of the year, which riveted the attention of the general public, were the miners' strikes in Michigan and Colorado. That these disturbances developed into the proportions of the civil war is largely due to the pro-labor attitude of the administration, reflecting the lack of ability, balance and qualification for office possessed by the Secretary of Labor. Reference to the Michigan condition may be dismissed with the significant statement that the report of the congressional committee appointed to conduct an impartial investigation has, for obvious reasons, never been submitted.

The Colorado events have not yet passed into history. The Federal soldiers are still policing the affected districts, and the situation of the operating companies involved are clearly set forth in a letter addressed to President Wilson on September 18 by the Colorado Fuel & Iron Company. The operators quite properly directed the attention of the President to the fact that the violence was initiated by only a small group of non-workers under the direction of foreigners, who have no understanding of their legal rights. They also pointed out that the United States Government refused to make peace with Huerta in Mexico at the expense of political morality, and for the same reason a surrender should not be made to those who incite and coerce anarchy.

The Iron Molders' Union is devoting itself more and more to subterranean political attacks, not only upon foundry interests, but also upon those congressional representatives elected from manufacturing districts who do not carry out the orders emanating from the head of the American Federation of Labor. Above all

things we must make an effort to instill in the minds of the legislators, as well as of our employees, that observance of American ideals and respect for law are the foundations upon which the commercial success of our nation has been built.

Membership

The depressed business conditions have not seriously affected our membership. This seems to indicate an appreciation of the valuable efforts that our association puts forth and which enable founders to operate their plants upon an equitable basis, which they would not individually maintain. With a renewal of the prosperity to which we look forward we are promised many applications for membership from founders who realize the necessity for adoption of the principles endorsed by this association.

Clayton Bill

The Clayton anti-trust bill containing a clause attempting to establish the status of labor organizations to limit the issue of injunctions in labor disputes and to provide for trial by jury for certain contempts, has been passed. The bill as finally passed does not interfere with the operation of the Sherman anti-trust law, it does not alter the law of conspiracy, and it cannot be objected to on the ground of constitutionality. It only reiterates the existing practice in the issuance of injunctions and the established right of the unions to attempt to secure results only by legitimate methods. I wish to acknowledge on behalf of our association the courteous co-operation given to our efforts by the National Metal Trades Association, the American Anti-Boycott Association, National Association of Manufacturers, National Erectors' Association, the National Electric Light Association and the Council for Industrial Defense.

Although the attempt of these various national associations to direct energies along parallel lines without duplication of effort is still in its inception, the development of our combined work gives promise of results which will accrue to the benefit of all members of the National Founders' Association in the operation of their industries under the principles which we unanimously approve.

Report of Commissioner McClintock

Due primarily to the present industrial conditions, but five members have requested and received the support of the association in combating strikes in the past year.

One of these was called on March 2 at Canton, Ohio. It was demonstrated inside of 48 hr. that the police were unable or unwilling to cope with the situation. The attitude of the Canton police department was as wanton a disregard of police duty as has ever come to my attention and a disgrace to the city. It was quite apparent that the authorities hoped that by withholding protection the foundrymen would become discouraged and make settlement with the union.

On March 3, 1914, after an expenditure of over $200,000 in strike benefits and a most strenuous campaign lasting over 15 months, the molders' union gave up the fight against our Erie members, withdrew their national representative and discontinued strike benefits. At the time this action was taken there were approximately 360 molders and coremakers and 130 apprentices drawing strike benefits, who were left without employment to shift for themselves. The surrender on the part of the molders' union was absolutely unconditional. No conferences or meetings of any kind were held between the foundrymen and officers or committees of the union.

The fact that there have been fewer strikes in the last half of the year than the first can be attributed to the fact that business conditions have not been favorable to agitation and strikes.

Secretary Taylor's Report

One matter outside of the regular routine has been the investigation by the Federal industrial commission of the association's plan of operation in dealing with the iron molders' union and the results obtained.

Records for the Federal Industrial Commission

Following the first public hearing, at which Mr. Briggs testified, we prepared at the commission's request an outline of the plan of organization, the policy and purposes of the association, and a detailed account of the strikes which have occurred in the shops of its members since its organization. In doing this it was necessary for us to consult our early files and records, which have all been preserved. Several representatives of the commission have visited our office to procure information, and one special agent spent three weeks with us gathering material for a report of the experience of the association and the iron molders' union in collective bargaining, under the operation of the New York agreement. All our records in the shape of annual reports, council minutes, etc., were turned over to this agent without reserve and every assistance was given to enable her to arrive at a true understanding of the situation.

In addition to this, through our general counsel, Mr. Monaghan, we have submitted legal briefs on the closed shop policy of the molders' union and its monopolistic agreement with the stove founders' association. It is understood that we are to be afforded an opportunity to appear at a future hearing of the commission, and we have prepared for submission at that time further material showing the closed shop restrictions of the union and their economic effects, the contrast in the efficiency of union and open shops, the utter disregard which its officers have for their agreements, and the violence and lawlessness which accompany the labor difficulties in which they are concerned.

The Review

Perhaps the most interesting part of the secretary's duties during the past year has been the editing and circulating of The Review. The National Metal Trades Association has increased the circulation of The Review among the employees of its members, so that the N. F. A and the N. M. T. A. now distribute about an equal number. The combined circulation is not, however, large compared with the combined circulation of all trade union and socialistic publications, which is estimated at 5,000,000 copies. In the early part of the year requests from employees of firms outside the two organizations increased to such an extent that we were compelled to change our free notice to apply only to employees of our own members and to ask a nominal subscription price from others.

School Teachers Organizing

Recently an attempt was made to include a course in unionism in the Chicago public schools under the guise of collective bargaining. That the movement was not successful was due to the opposition of a member of the board of education who had himself at one time been a union workman. In Chicago, Cleveland and other cities the public school teachers are openly organizing into unions directly affiliated with the American Federation of Labor.

Further evidence of the trend of public opinion is the action of a recent church conference in Chicago, which, with scarcely a dissenting vote, adopted a resolution recommending that in all questions of employment the union man should be given preferment.

If the circulation of The Review should be increased, say, among the clergymen, and the teaching professions generally, that is, among people not actively in touch with manufacturing problems, an opportunity to learn both sides of this union question would be gained.

Officers and Committees

The report of the nominating committee, H. J. Boggis, Taylor & Boggis Foundry Company, Cleveland, chairman, was accepted, and officers and committees were elected as here listed. Special attention is called to the fact that O. P. Briggs, H. E. Wilcox Motor Car Company, Minneapolis, was elected honorary member of the council.

President—William H. Barr, Lumen Bearing Company, Buffalo.

Vice-president—C. A. Chase, Syracuse Chilled Plow Company, Syracuse, N. Y.

Secretary—J. M. Taylor, 29 So. La Salle street, Chicago.

Treasurer—Chicago Savings Bank & Trust Company, Chicago.

First District: E. A. Jones, E. D. Jones & Sons Company, Pittsfield, Mass.; D. K. Bartlett, Builders' Iron Foundry, Providence, R. I.; John A. Mead, Howe Scale Company, Rutland, Vt.; W. B. Leach, Hunt-Spiller Mfg. Corporation, Boston; F. C. Fromm, Manufacturers' Foundry Company, Waterbury, Conn.

Second District: Lyman P. Hubbell, Fillmore Avenue Foundry & Iron Works, Buffalo; James Eastwood, Benjamin Eastwood Company, Paterson, N. J.; Edward Norris, Utica Heater Company, Utica, N. Y.; James Flockhart, Maher & Flockhart, Newark, N. J.; H. P. Macdonald, Snead & Co. Iron Works, Jersey City, N. J.

Third District: Edward Kneeland, United Engineering & Foundry Company, Pittsburgh; Stuart R. Carr, Stuart R. Carr & Co., Baltimore; C. W. Davenport, National Foundry Company, Erie; N. H. Hiller, Carbondale Machine Company, Carbondale; Wm. S. Hallowell, Harrison Safety Boiler Works, Philadelphia.

Fourth District: W. B. Greene, Palmers & DeMooy Foundry Company, Cleveland; W. C. Slater, Bass Foundry & Machine Company, Ft. Wayne, Ind.; Joseph J. Wilson, Cadillac Motor Car Company, Detroit; F. M. Mechling, Novelty Iron Company, Canton, Ohio; Geo. O. Rockwood, Rockwood Mfg. Company, Indianapolis.

Fifth District: S. B. Lafferty, Red Jacket Mfg. Company, Davenport, Iowa; J. H. Steedman, Curtis & Co. Mfg. Company, St. Louis; James F. Lardner, Rock Island Plow Company, Rock Island, Ill.; E. E. Baker, Kewanee Boiler Company, Kewanee, Ill.; W. H. Winslow, Winslow Brothers Company, Chicago.

Sixth District: Theodore O. Vilter, Vilter Mfg. Company, Milwaukee; C. M. Power, St. Paul Foundry Company, St. Paul; C. A. Luster, Clyde Iron Works, Duluth; H. M. Wallis, J. I. Case Plow Works, Racine, Wis.; Charles T. Jeffery, Thos. B. Jeffery & Co., Kenosha, Wis.

Seventh District: George W. Watts, Canada Foundry Company, Ltd., Toronto; W. M. Gartshore, McClary Mfg. Company, London, Ont.; A. R. Goldie, The Goldie McCulloch Company, Ltd., Galt, Ont.; Jno. M. Taylor, Taylor-Forbes Company, Ltd., Guelph, Ont.; W. F. Angus, Canadian Steel Foundries, Ltd., Montreal.

Eighth District: E. H. Sholar, Chattanooga Implement & Mfg. Company, Chattanooga; R. W. Boland, Birmingham Machine & Foundry Company, Birmingham; E. Y. Hartwell, Hartwell Iron Works, Houston, Tex.; H. W. Sanford, Sanford-Day Iron Works, Knoxville, Tenn.; W. D. Trabue, Jones & Hopkins Mfg. Company, Nashville, Tenn.

War Advance in Australian Steel Prices

British journals refer to the high prices Australian consumers of fencing wire and other steel products heretofore imported from Germany are now quoted by British mills. With present high rates of freight and insurance the increased cost is about 60 per cent. It is stated that Australian merchants are sending inquiries to the United States and some of them are expected to visit this country in the hope of getting lower than British prices.

Another Australian effect of the war is that the building of the new steel plant at Newcastle, N. S. W., by the Broken Hill Proprietary Company has been delayed. At first the company decided to discharge practically all the 1000 men engaged on construction work, but it is now understood about 200 will be retained.

The showing in favor of the United States in its foreign trade for the month of October is fully up to expectations. The excess of the value of exports of merchandise over imports was $57,305,074, which is far ahead of the record of immediately preceding months. The value of exports of merchandise was $195,283,852, while the value of imports was $137,978,778.

The Pennsylvania State Industrial Board has arranged to give hearings December 4 on the proposed standards of safety in works for the manufacture of forgings, for transmission of power, for wood-working machinery and for machine tools. The committee preparing standards of safety for foundries is expected to meet December 1.

Lake Superior Ore Rate Hearing

WASHINGTON, D. C., November 24, 1914.—The final hearing in the Lake Superior iron ore freight rate cases took place before the Interstate Commerce Commission November 18, 19 and 20. On the conclusion of the testimony Commissioner Meyer stated that first briefs must be filed on or before December 15, second briefs on or before January 1, and that the commission would set a date in the first week in January for the final argument. It was also stated, semi-officially, that the commission would make every possible effort to decide the case in time to permit the ore-carrying roads to file tariffs embodying the rates to be fixed by the commission before the opening of navigation next spring.

The hearing was attended by representatives of the ore-carrying railroads, the United States Steel Corporation, and the independent steel manufacturers. The testimony dealt chiefly with the relative cost of handling the ores of the corporation and those from the mines of the independents, and every statement by witnesses was sharply contested by the other side, and was made the subject of searching cross-examination, counsel for the independents in particular attacking the evidence of the railroad experts with great vigor. Witnesses for the roads testified that the cost of handling the ore from independent mines was much greater than for that produced by the Steel Corporation, for the reason that the latter's ores were carefully assorted in accordance with samples assayed in their mine laboratories and were shipped to the docks in solid cars and sometimes in solid trains, thus making it a simple matter to switch the cars into the appropriate blocks for transfer to the boats. The Steel Corporation, it was stated, had developed this system of grading ores beyond that of the independents, and in view of the large tonnage of carefully graded ores furnished the carriers the resultant cost of handling was very low. Under a hot fire of cross-examination the witnesses admitted that certain of the independent producers graded and shipped their ores with the same care as was exercised by the Steel Corporation, but that as a class the independents were not so careful, and the cost of handling their ores was, therefore, greater.

Another important item, according to the railroad experts, was the longer shipping season of the independents as compared with the Steel Corporation. The latter ships from April 7 to November 18, the witnesses stated, while Pickands, Mather & Co., during the current season are shipping from April 1 to November 29. On the morning of November 18, according to one of the witnesses, the thermometer stood 2 deg. below zero at Two Harbors, which meant that for ten days or more after the corporation ceased shipments the docks were handling frozen independent ores at greatly increased cost for labor, steam, etc. Similar conditions prevailed at the beginning of the season before the corporation began work.

Counsel for the independents sought to show by the examination of railroad witnesses that the valuation of the ore-carrying roads in the Lake Superior region was much too high and that if reduced to reasonable figures it would afford a basis for much lower freight rates.

W. L. C.

The Congressional Armor-Plate Commission, composed of Senator Tillman, of South Carolina, chairman of the Senate Committee on Naval Affairs; Representative Padgett, of Tennessee, chairman of the House Committee on Naval Affairs, and Rear Admiral Joseph Strauss, left Washington November 20 for Pittsburgh to visit the plant of the Carnegie Steel Company. The Bethlehem and Midvale plants will be visited the present week. The commission's report is required to include an estimate of the cost of a plant having an annual capacity of 20,000 tons and one of 10,000 tons, including in both cases the itemized estimated cost of buildings and machinery, the estimated annual cost of maintenance, and the cost of the finished product. The sum of $5000 was appropriated to pay the expenses of the commission. The Bureau of Ordnance of the Navy Department has recently gathered a large amount of material on the cost of armor-plate production, which has been turned over to the commission.

Pittsburgh and Nearby Districts

The eighth annual dinner of the Chamber of Commerce of Youngstown, Ohio, which was held in the Hotel Ohio in that city on the evening of November 19, was attended by nearly 600 persons. The dinner was the most successful that has been given by the organization. James G. Butler, Jr., president of the chamber, was toastmaster. Among the notable speakers was F. D. Underwood, president Erie Railroad Company. James A. Farrell, president United States Steel Corporation, was on the list of speakers, but was prevented from attending by illness. He was scheduled to talk on "The Importance of Further Developing Our Export Trade," and has promised to deliver an address on this subject at a noonday luncheon at the Chamber of Commerce as soon as he finds himself in condition to do so. The movement recently started by the organization to increase its membership has been remarkably successful, the number of members having been raised from 282 to over 1200, Mr. Butler having been especially effective in pushing this work. Comprehensive plans have been made for the business advancement of Youngstown.

The McAleenan Brothers Company, Pittsburgh, doing steel plate construction work of all kinds, has just completed the installation of a modern compression riveting plant, which has much increased its productive capacity.

The Canton-Hughes Pump Company, Wooster, Ohio, manufacturer of pumping machinery, has been reorganized. R. Bowen, formerly with the Epping-Carpenter Company, Pittsburgh, has acquired the interest of H. H. Whiting, and has been elected president and director. Mr. Whiting has severed his connection with the company.

The Wheeling Mold & Foundry Company, Wheeling, W. Va., is feeling the effects of the business depression, and some parts of its Manchester works have been closed down until orders improve.

The National Transit Company, Oil City, Pa., has received an order from Cosden & Co., producers of petroleum, for two 100-hp. horizontal twin gas engines, each direct connected to a vertical triplex single-acting power pump. The engines are to operate on natural gas and the pumps are to force crude oil a distance of 38 miles through a 6-in. line.

Alfred P. Stewart, who recently purchased the interest of L. A. Green in the L. A. Green Equipment Company, Pittsburgh, has been elected president and treasurer. The business will be conducted under the former name, carrying accounts of the Advance Pump & Compressor Company, Slater, Marsden & Whittemore Company, Reading Chain Block Company, Phoenix Electric Company, Schaefer Mfg. Company and C. A. Thompson & Co. The company is also general selling agent for various power house equipment and railroad supplies.

The plant of the Wheeling Sheet & Tin Plate Company at Yorkville, Ohio, resumes operations this week after an idleness of nearly four weeks.

For economic reasons and to facilitate the handling of business, the Petroleum Iron Works Company, Sharon, Pa., and its allied interests have taken out incorporation papers in Ohio and will surrender their Pennsylvania charters. The Petroleum Iron Works Company is capitalized at $1,200,000. The Pressed Steel Products Company and the Pennsylvania Tank Car Company each have been capitalized at $500,000. The incorporators of the Petroleum Company are C. H. Todd, G. P. Bard, J. L. Considine, L. P. Sweeney and H. C. Knowles. The incorporators of the other companies are the same, except that G. C. Mittinger takes the place of H. C. Knowles. The Pennsylvania Tank Car Company is rushed with work, while the other concerns are operating at about 50 per cent. capacity.

The United States Court of Appeals at Philadelphia has affirmed the decree of the lower court in the patent suit of John C. Taliaferro and Edwin Norton against the Washington Tin Plate Company, Washington, Pa. The lower court held that a device of the defendant company was an infringement of plaintiffs' patent for a tin-plate cleaning machine, granted an injunction against the use of such device and referred the matter for an accounting.

The Mingo Block Coal Company, Parkersburg, W. Va., has been incorporated with $2,000,000 capital stock by George S. Sarver, E. A. Ferrin, C. C. Brown and others, of Greensburg, Pa.

The Lafayette Co-operative Window Glass Company, Morgantown, W. Va., will build an extension at a cost of $200,000, which will double its capacity.

The Edgemont Improvement Company, Edgemont, W. Va., has been incorporated with $5000 capital stock to construct an electric light system, etc. Among the incorporators are John D. Barry, Frank Neely and W. S. Hamilton.

W. L. Pettit, Claysville, Pa., will build a garage and machine shop of brick and steel, 45 x 70 ft.

Langhorne & Langhorne, Barboursville, W. Va., will build a machine shop.

The Pennsylvania Railroad has authorized Kenneth M. Murchinson, architect, New York City, to prepare plans for a new passenger station at Johnstown, Pa., to cost about $100,000.

The Erie Saw Company, Erie, Pa., has increased its capital from $25,000 to $75,000.

The Copper-Die Horse Shoe Company, Pittsburgh, has increased its capital from $10,000 to $50,000, and will make some additions to its works.

Unfavorable Outlook for Government Ship-Owning Bill

WASHINGTON, D. C., November 24, 1914.—The semi-official announcement that the President in his message will insist upon the enactment at the short session of the so-called Alexander bill, creating a corporation controlled by the Government to purchase and operate merchant vessels in the foreign trade has already brought to the White House many protests both from public men and from persons interested in the shipbuilding industry. On the other hand, Southern senators and representatives and cotton interests are urging this legislation as necessary to the continuance of the cotton industry on its present broad basis. The issue is thus developing into one of sectional alignment which promises a bitter fight in both houses when the Alexander bill is taken up. There is no doubt that the measure is strong enough in the House Committee on Rules to secure the desired special order, but it is a serious question whether the order can be adopted. The opponents of the Alexander bill declare it will never be brought to a vote, for the reason that a sufficient number of Democrats will vote against the special rule for its consideration to prevent its adoption. The most experienced observers are of the opinion that the President will abandon the campaign for the passage of the bill if it can be demonstrated to him that it is certain to be beaten.

Representatives of American shipbuilders are conducting a very effective campaign against the bill and have assurances from prominent members of both houses that it will be defeated. Friends of the bill declare that it would be the policy of the proposed Federal corporation to construct vessels in American shipyards instead of building or purchasing them abroad; but since the primary object of the bill is to enlarge the American merchant marine at the earliest possible date, it is highly probable that the greater part of the tonnage acquired would be purchased rather than constructed, and in any event they would be bought at the lowest possible cost. W. L. C.

The Cleveland Clutch Company, Ravenna, Ohio, which has been taken out of the hands of the receiver and reorganized, expects to resume business shortly. W. H. Marsh has been chosen president and Ray Walter, secretary and treasurer. These two officers, with John Bennett and R. S. Keppie of Ravenna and J. W. Thorman, C. C. Cleland and J. Hedges of Cleveland form the board of directors.

The Machinery Markets

Slow improvement in the domestic demand, backed up by a continuance of foreign buying of machine tools, shrapnel and automobiles, describes the situation in a general way, though conditions differ more or less in all of the principal machinery centers. In New York considerable business is contingent on the placing of orders for shrapnel. In all branches of the trade improvement continues in New England, with the call for machine tools for export especially notable. Business in tools is of a miscellaneous character and more particularly for repair work in Chicago, but on the whole an improvement is felt. In Milwaukee buying for export and to fill requirements of the agricultural implement manufacturers is the feature. Orders for automobiles and shrapnel and inquiries indicating more business of the kind are noticed in Detroit, but the domestic demand does not show any marked increase. Both the export and domestic demand are better in Cleveland, where the call for turret lathes to go abroad is good and the buying of automobiles for foreign shipment is helping trade. Cincinnati felt a lull in the placing of orders last week, but the export trade continues to stimulate domestic business and the jobbing foundries are doing better. Steady improvement is reported in the Central South and there is evidence of better business to come in the establishment of industrial plants. Inquiries are brisker in the Birmingham territory. In Texas the machinery trade continues dull, but easier money indicates a trend toward more normal conditions. In St. Louis there is a greater tendency to go ahead with new enterprises, money is easier and a better feeling in machinery circles is noted. The trade in San Francisco continues dull and tool orders are mostly small and scattered. In the Pacific Northwest the lumber business and some other lines are improved.

New York

NEW YORK, November 25, 1914.

New buying of machinery for export has tapered off to a considerable extent and the trade is at present chiefly concerned with the prospects of selling those companies who are planning to enlarge their facilities for manufacturing shrapnel or who may engage in that work as a new venture. Some of the latter have sent out inquiries, but the placing of orders is entirely contingent upon their getting orders for the shells. The number of firms who are actually engaged in shrapnel-making narrows down to a few, although names of firms who are "figuring" on doing the work are constantly coming to notice. Among them are several Canadian shops, including the Canadian Pacific Railway. Meanwhile the demand from industrial and railroad sources for machinery and equipment continues light.

New orders for motor trucks are reported to have been placed with American manufacturers by foreign governments recently, one of them having been placed with the White Company for 600 cars additional to those previously ordered. They are for the French Government and will keep the White Company's plant busy into next spring.

The Paragon Metal Cap Company, 201 Thirty-seventh street, Brooklyn, N. Y., has increased its capital stock from $50,000 to $100,000.

The Gibney Tire & Rubber Company, 250 West Fifty-fourth street, New York, has reduced its capital stock from $100,000 to $50,000.

The American Hoist & Derrick Company, 50 Church street, New York, has voluntarily dissolved.

The Standard Clay Refining Company, Sacket Harbor, N. Y., has increased its capital stock from $10,000 to $30,000.

The Ensor Mfg. Company, 28 Roosevelt avenue, Jersey City, N. J., has been incorporated with a capital stock of $200,000 by Albert Ensor, C. H. Robinson and S. T. Fairbanks to manufacture stable equipment, feeding devices, etc. It plans to have the parts of its devices manufactured under contract for the present; but will do its own assembling. It desires to get in touch with manufacturers of malleable castings and metal pails.

Perth Amboy, N. J., has voted to issue lighting plant bonds in the sum of $150,000.

Binghamton, N. Y., will sell $148,000 of municipal light plant bonds.

Bids have been opened for $33,000 of waterworks bonds for Palmyra, N. Y.

The Diamond Door Hanger Company, 28-30 Rodney street, Brooklyn, N. Y., has been incorporated with a capital stock of $25,000, to manufacture building hardware and metal articles. George W. Mears is president and C. C. Mears secretary.

Port Washington, N. Y., has voted to construct a municipal water system at an estimated cost of $200,000.

The Searle Mfg. Company, Troy, N. Y., has increased its capital stock from $250,000 to $500,000.

The Syracuse Lighting Company, Syracuse, N. Y., has awarded the general contract to the Taylor-Hornby Construction Company for the erection of a one-story generator house.

The Life-Like Base Ball Player Corporation, Mt. Vernon, N. Y., has been incorporated with a capital stock of $250,000 to manufacture motion picture apparatus, amusement appliances, etc. F. B. Knowlton, E. J. Fornhan and E. M. Beyhl, New York City, are the incorporators.

The Gurney Ball Bearing Company, Jamestown, N. Y., has increased its capital stock from $200,000 to $400,000.

The Finley-Robertson-Porter Company, Port Jefferson, N. Y., of which F. R. Porter is manager, will equip a plant for the manufacture of motors, engines, auto-vehicles, etc.

The Robertson-Cataract Electric Company, Buffalo, of which W. E. Robertson, is president, has let the contract to the Turner Construction Company for the erection at West Mohawk street and South Elmwood avenue of a four-story concrete factory, 40 x 115 ft., for the manufacture of electrical fixtures and supplies.

A certificate of incorporation has been granted to the Scientific Plant Food Company, Buffalo, capitalized at $20,000. It will build and equip a plant for the manufacture of fertilizers and plant foods. W. C. Stephenson and A. C. Hornberger, 109 Northampton street, are the directors.

A plant for the manufacture of soap, toilet supplies, etc., is to be erected at Newburgh, N. Y., at a cost of approximately $100,000 by the Granite City Soap Company.

Philadelphia

PHILADELPHIA, PA., November 23, 1914.

The Chester County Motor Company, Coatesville, Pa., has increased its capital stock to $500,000 and plans the construction of a factory for the manufacture of commercial trucks. J. Edwin Brinton is president.

George & Borst, 277 South Eleventh street, Philadelphia, have been awarded the contract for the construction of a one-story addition to the factory of the Atwater-Kent Mfg. Company, 4937 Stenton avenue, Philadelphia, manufacturer of ignition devices, etc.

The John Long Paper Company, Philadelphia, Pa., is erecting a three-story addition of brick and concrete, 61 x 65 ft., at Twenty-fourth and Vine streets, at a cost of about $19,000.

The Hench & Dromgold Company, York, Pa., has completed its farm implement factory, consisting of the original building and two additions, 80 x 160 ft., and 80 x 240 ft., two stories. The equipment is being installed. W. W. Birnstock is manager.

Sykesville, Pa., has voted in favor of a municipal water plant.

Upper Darby, Pa., has voted $150,000 of sewer improvement bonds.

The Washington Asphalt Block & Tile Company, Washington, D. C., will erect a plant at R and South Capitol streets, consisting of three buildings, as follows: Main factory, 50 x 150 ft.; boiler room, 30 ft. square, and an office building, at a total cost of about $8000.

Baltimore, Md., has voted to issue $3,000,000 of sewer bonds.

New England

BOSTON, MASS., November 24, 1914.

Conditions in the metal industries appear materially brighter. The machinery trade continues to improve in all its branches. Domestic business is slowly increasing in volume. Most of it will meet the requirements of American factories which are receiving orders for war material from Europe; but machine tools for general purposes are also in better demand. A continuous flow of European purchases of machine tools is maintained. The pig-iron merchants are having a more active trade. The local wire people are much more cheerful. A fortnight ago they were pessimistic; but this has all changed. The last few days a lot of good business has been booked.

The shrapnel business for Europe has not all been booked. A certain amount of speculative inquiry is being made, various houses hoping to act as intermediaries in the placing of large orders. Manufacturers are so reserved in their statements that it seems impossible to get at the actual facts; but it is known that business in these projectiles, already contracted for in the United States, or certain to be contracted for in the immediate future, totals enormous figures and involves large purchases of machinery, especially turning machines of various types. Manufacturers of firearms are buying machinery liberally, and so are makers of cartridges. An enormous order for scabbards, made of leather with metal point and trimmings, is giving some nice jobs to the pressed metal people.

A good deal of mystery surrounds the reported order of 20 submarines for a European government, presumed to be placed or soon to be placed with the Fore River Shipbuilding Company, Quincy, Mass. The general opinion of persons closest to the inside is that some such amount of business will be booked if the United States Government decides to permit the shipment of the vessels, "knocked down," as it were, in structural sections, as cargo for ordinary liners carrying freight. The New London Ship & Engine Company, New London, Conn., which builds the engines for the submarines constructed at Fore River has awarded the contract for an additional shop building, 46 x 118 ft., one story.

The large additions planned by the Winchester Repeating Arms Company, New Haven, Conn., mentioned last week, will consist of a forge shop 53 x 208 ft.; a building for hydraulic press work, 53 x 161 ft., and a one and two-story structure 52 x 102 ft. for the bluing department. All will be of reinforced concrete.

The N. D. Cass Company, Athol, Mass., will build an addition to its toy factory, to cost $15,000.

The Biddle & Smart Company, Amesbury, Mass., will build an addition to its wood-working factory, to give 5000 sq. ft. of new floor space.

The Boston Duck Company, Bondsville, Palmer, Mass., will build an addition to its mills.

M. J. Dunn & Co., Springfield, Mass., carriage manufacturers, will build a factory 54 x 95 ft., four stories and basement, with an ell 20 x 95 ft., of mill construction.

The Scovill Mfg. Company, Waterbury, Conn., brass manufacturer, is about to erect a storehouse 167 x 211 ft., one story.

The Bridgeport Pattern & Model Company, Bridgeport, Conn., will build a factory on Bishop avenue, 42 x 72 ft., with ell 24 x 50 ft., three stories, mill construction.

Bridgeport, Conn., has sold $300,000 of sewer bonds.

The Brown & Sharpe Mfg. Company, Providence, R. I., has brought out a milling machine attachment designed for the cutting of short lead spirals, a type of work that has become rather common. Replacing the usual practice of connecting the table feed screw directly to the spiral head spindle by gearing—gearing up from the screw to the work in a considerable ratio—the attachment is driven by a round belt from a grooved pulley on the rear end of the machine spindle to a pulley from which power is transmitted by means of telescopic shaft and universal joints and gearing to the spiral shaft. The transmission includes a large gear which takes the place of the usual index plate. The gear has 18 holes, for use in cutting double, triple or other multiple threads.

Indianapolis

INDIANAPOLIS, IND., November 23, 1914.

The Eclipse Mfg. Company, Indianapolis, Ind., recently incorporated, has contracted with the Belvidere Screw & Machine Company, Belvidere, Ill., for the manufacture of its spark plugs and motor accessories.

The Farm Improvement Company, 616 Fletcher Savings & Trust Building, Indianapolis, Ind., plans to construct about six plants near Indianapolis for grinding limestone. W. H. Dye is secretary.

The Pittsburgh Plate Glass Company, Frick Building, Pittsburgh, Pa., will build an addition to its plant at Kokomo, Ind., to cost $200,000. It will increase the output 20 per cent.

The Metal Products Company, Goshen, Ind., has been incorporated with $10,000 capital stock, to manufacture metal products. The directors are Wilson N. Rood, A. C. Michael and S. O. Nofziger.

The Wolcott Utilities Company, Wolcott, Ind., has been incorporated with $25,000 capital stock, to supply water. Thomas Taylor, Truman Holdridge and John E. Kercher are the directors.

The South Bend Supply Company, South Bend, Ind., has increased its capital stock from $40,000 to $50,000.

The plant of the Ideal Spring Wheel Company, Elkhart, Ind., maker of all-steel auto wheels, suffered a loss of $25,000 by fire, November 17.

The factory of the Sevison Electric Company, Elkhart, Ind., maker of automobile fixtures, suffered $5000 loss from fire November 17.

W. R. Newcomer, town clerk, Waterloo, Ind., will receive bids until 7 p.m. December 3 for a sewage disposal plant, etc.

Chicago

CHICAGO, ILL., November 23, 1914.

Comparison of last week with a number of those preceding would justify the general statement that an improvement in business is under way; but that the increase in the number of machines for which orders were placed can hardly be credited with any special significance, because of the miscellaneous character of the business secured. The Atlantic Coast Line bought at Chicago some of the equipment for its new flue shops and the New York Central ordered a slab milling machine costing approximately $4000. The Sheboygan Cigar Box & Lumber Company has been buying machinery for its new box factory and is still in the market for wood-working machinery to be installed in buildings not yet completed. In Chicago there is a considerable aggregate demand for tools suitable for the repair departments of industries of varied character that have recently moved to new and larger quarters. Inquiry is also noted for new and second-hand electric power equipment, a 14-in. lathe, a 14-in. crank shaper, a surface grinder, a 48-in. power squaring shear with capacity to cut 3/16-in. steel, and a second-hand punch press with 10-in. gap.

The Shepherd Service Company, Chicago, has been incorporated with a capital stock of $1000, to manufacture and deal in machinery appliances, incident to lighting, heating, sanitation, etc. Percy Graham, 1529 East Sixty-sixth place, C. E. Dunbar and E. M. Gaffey are the incorporators.

The Post Machine Company, Chicago, has been incorporated with a capital stock of $10,000 by F. W. Rueckheim, H. G. Eckstein and Louis Rueckheim, Peoria, Harrison and Sangamon streets.

The Acme Electric Portable Ventilating Company, Chicago, has been incorporated with a capital stock of $2500, by E. Kasischke, 3712 South Winchester avenue, Oscar Wolff and H. A. Tiffany.

The Valley Chemical Company, Utica, Ill., of which R. F. Knott was receiver, has been acquired by the Central Commercial Company, Chicago, which concern is now making arrangements to satisfy the creditors. It has contracted for an output of 40,000,000 lb. of silicate of soda for the next year, and will install additional machinery.

The bridge shop and pattern rooms of the Chicago & Eastern Illinois Railroad at Danville, Ill., were destroyed by fire. The loss on patterns and forms is $10,000.

Nokomis, Ill., has voted in favor of issuing lighting plant bonds in the sum of $25,000.

The Harman Engineering Company, 144 Freedonia avenue, Peoria, Ill., will receive bids until 10 a. m., December 1, for machinery to convert the Pekin, Ill., pumping plant machinery from steam to electric drive.

Neoga, Ill., will receive bids until 11 a. m., December 4, for the construction of a waterworks system. One pumping engine, electrically driven, is specified. C. L. James, Mattoon, Ill., is the engineer.

Des Moines, Iowa, has voted to issue $2,450,000 of waterworks bonds. Lloyd F. Miles is city treasurer.

It is reported that the Sanborn Electric Company, Sanborn, Iowa, expects to purchase within the next half year one 16-ft. x 60-in. horizontal tubular boiler. G. A. Healey is manager.

The Waterloo Brass Foundry, Waterloo, Iowa, has been incorporated to take over an existing business. B. Schultz is president.

The American Cement Machine Company, 1006 Johnson street, Keokuk, Iowa, which recently doubled its manufacturing facilities, intends to erect another factory.

T. J. Stinson, Spearville, Kan., has purchased the electric light plant at Pawnee Rock, Kan. He will install additional engines and dynamos, and reopen the plant, which has been shut down.

The plant of the Chamberlain Electric Light & Power Company, Chamberlain, S. D., was destroyed by fire.

Wayzata, Minn., has voted to issue $30,000 of waterworks bonds. R. Bickford is village clerk.

Milwaukee

MILWAUKEE, WIS., November 23, 1914.

It is considered fortunate for the metal trades that the farm machinery and agricultural implement manufacturing business is in such comparatively prosperous condition. Outside of the foreign demand for machine tools, it forms probably the most important feature in the demand for shop equipment. The good feeling in implement production may be noted from the fact that one large interest has resumed operations on a fairly large scale, while another has made marked increases in its working forces. Gasoline engine builders are running almost full blast and indications are for more improved conditions throughout the winter. Machine shops are coming back into the market slowly and some fair inquiries for tools have been received in Milwaukee. Sales are few and far between and still smack of the hand-to-mouth buying that has been the rule for practically the last twelve months. Motorcycle, automobile and motor truck builders in this district are showing productions considerably larger than a year ago and say that the market is at least as firmly based on actual consumption as then.

The Anchor Brake Shoe & Mfg. Company, Milwaukee, organized by the Sivyer interests, is marketing brake shoes and railroad material of its own design, but produced under contract. Eventually it intends to establish a plant of its own. The capital stock is $50,000. John D. Ristine is president, and B. C. Rowell, secretary.

The Universal Oxygen Company, Sheboygan, Wis., a large producer of gas for welding concerns, is preparing to double its capacity. The company, which operates under the Rowlands-Mueller patents, has been working double shifts and on Sundays for nearly three months and has reached a production of nearly 100,000 ft. of gas per month. Its containers have been shipped from Germany, but on account of the war it is likely that arrangements will be made for the installation of a department for manufacturing gas tanks at Sheboygan.

The Hudson Garage Company, Hudson, Wis., was destroyed by fire last week. W. M. Grant, the proprietor, is planning to rebuild immediately.

C. W. Van Doren and Reed Brothers, Antigo, Wis., are having plans made for a fireproof garage and machine shop, 60 x 70 ft., with freight elevator. An investment of $6500 is planned.

D. T. Ohmstaedter, 921 Washington street, Racine, Wis., has started work on a garage and repair shop.

Hayward, Wis., has voted to bond itself for $12,000 for an artesian well and pump. C. O. Bayo is town clerk.

The Milwaukee Northern Company is making plans to install an electric light plant at Belgium, Wis.

Fire totally destroyed the machine shop and garage of T. H. Field & Son, Rice Lake, Wis., causing a loss of $25,000.

The stockholders of the Hermann-Sanford Saddlery Company, Springfield, Mo., have authorized the purchase of between $8000 and $10,000 worth of machinery.

Cincinnati

CINCINNATI, OHIO, November 23, 1914.

As far as known, no machine-tool plants have put on night forces in addition to those previously reported. While there is yet considerable export business under consideration, there seems to have been a lull in the placing of orders last week. However, several firms that were operating on short time 10 days ago have received enough business to enable them to put on full day forces. In addition to lathes a number of radial drilling machines have been ordered lately from abroad. The export trade continues to have a stimulating effect on domestic business, and the inquiry from home customers shows a decided improvement over last month's record.

Local harness and saddlery makers are keeping a number of jobbing work machine shops busy turning out small fittings. European orders received by Cincinnati manufacturers for this class of goods since the war began are estimated to run over $2,000,000. The jobbing foundries are nearly all running on full time, and several of them have enough work ahead to keep them busy through the remainder of the year.

Walter G. Franz, consulting engineer, Union Trust Building, Cincinnati, will open bids December 1 for heating equipment to be installed in the proposed chemistry building for the University of Cincinnati.

Howard McClorey, architect, Gerke Building, Cincinnati, has drawn up plans for a garage and repair shop to be erected for Adam Grossman, Covington, Ky., at a cost of about $8000.

It is reported that Weller & Thomas have had plans prepared for a motor truck factory, 100 x 190 ft., two stories, of brick construction, to be erected at Columbus, Ohio. J. A. Thomas, 287 Dryden avenue, Zanesville, Ohio, can furnish full particulars.

A boiler and laundry equipment will be required by the Bethesda Hospital Association, of which R. C. Burton, Zanesville, Ohio, is chairman.

The Ironton Garage Company, Ironton, Ohio, has been incorporated with $10,000 capital stock by R. W. Rowland, W. R. Edwards, and others.

The Wood Shovel & Tool Company, Piqua, Ohio, is having a building erected, 50 x 100 ft., one story, of brick construction, to be used as a polishing room for shovels.

H. J. Young, Nappanee, Ind., is inquiring in this market for a hemp fiber softening machine, new or second hand, to be fitted with 36, 40 or 48 6-in. corrugated rolls, to run forward only.

Cleveland

CLEVELAND, OHIO, November 23, 1914.

Business in machine-tool lines shows considerable improvement and the outlook is better than for some time. This applies both to foreign and domestic demand. A Cleveland builder during the week took three orders for automatic machines for export, aggregating 20 machines; and a new inquiry from Russia for 46 automatics is expected to be closed shortly. The domestic demand for turret lathes has picked up materially, particularly in the East. An improvement is also noted in orders from the Central West. A fair volume of foreign orders for turret lathes continues to come out. The improved demand for automatic machines and lathes is due largely directly or indirectly to orders placed in this country for war material. Another large order for motor trucks for war purposes has come to Cleveland. It was placed by the British Government with the Peerless Motor Car Company. It is understood this order is for 300 trucks. Business with the dealers, while not active, shows a little improvement, although orders are still mostly for single tools.

Bids will be received by the commissioner of purchases and supplies of the city of Cleveland, December 4, for a general service pump and equipment for the municipal lighting plant.

The Standard Steel Castings Company, Cleveland, has increased its capital stock from $75,000 to $125,000.

The Forest City Electric Company, Cleveland, has increased its capital stock from $100,000 to $200,000.

The Hill Clutch Company, Cleveland, Ohio, is having plans prepared for an extension to its machine shop; but states that it has not definitely decided to build this addition. At any rate, the construction work will not be started for some time. This is in contradiction to a published report that the company is going ahead with large extensions to its plant.

The Willys-Overland Company, Toledo, Ohio, announces that it will make further extensions to its plant by the erection of two factory buildings; one two stories and basement, 200 x 1000 ft., to be used for assembling purposes, and the other a 200 x 200 ft. addition to its body manufacturing plant. The two buildings will add 17 acres of floor space, giving the Willys-Overland Toledo plant a total of 79 acres of floor space. This is claimed to be a larger amount of floor space than contained in any motor car plant in the world. Additions to the Overland plant providing 25 acres of floor space have just been completed.

The City Foundry Company, Toledo, Ohio, will erect a concrete and steel addition to its plant at 934 Hasting street. J. C. Burt and John Holzscheiter are the proprietors.

The Universal Indicator & Level Company, Toledo, has been incorporated with a capital stock of $10,000 by W. E. Hurlburtt, E. S. Smith, and others.

The Canton Brass Foundry Company, Canton, Ohio, has been incorporated with a capital stock of $20,000 by F. D. Held, F. W. Bond, C. B. McClintock, A. Sponseller and A. M. McCarty.

The Farrell-Cheek Steel Foundry Company, Sandusky, Ohio, has decided to go ahead with extensions to its plant which will about double its capacity. The contract for the

foundations has been awarded, and it is stated that the contract for the superstructure will be placed shortly.

Marion, Ohio, has voted to purchase or construct a municipal waterworks plant and has authorized the issue of $500,000 of bonds to cover cost. Elmer E. Blazer is clerk of the board of control.

The City Council, Sandusky, Ohio, has authorized the sale of $125,000 of sewage disposal plant bonds.

Bids will be received by M. H. Houseworth, mayor, Mason, Ohio, until November 30 for a boiler, engine, pump, injector, generator, exciter, switchboards, transformers and other equipment for a municipal lighting plant.

The machinery, tools and equipment of the South Akron Stamping Company, Akron, Ohio, will be sold at public auction by J. V. Welsh, the receiver, November 28. The plant is equipped with drills, presses and a few other machines.

J. Moulter, chairman public service commission, Sandusky, Ohio, will receive bids until noon, November 30, for furnishing and operating a street lighting system.

Norwalk, Ohio, is planning to go ahead with the erection of the municipal lighting plant. Some time ago a bond issue of $120,000 was authorized for this purpose. An engineer has not yet been engaged to design the plant.

Mt. Blanchard, Ohio, has authorized the issue of $10,000 of waterworks bonds.

The report that the Pennsylvania Railroad Company will erect new car repair shops at Wellsville is denied by officials of that company.

Crestline, Ohio, will receive bids until noon December 8 for furnishing and operating a street lighting system for ten years. Edward Libens is city clerk.

Detroit

DETROIT, MICH., November 23, 1914.

A number of local automobile manufacturers have received excellent orders for export and inquiries from abroad are likewise plentiful. It is stated that orders are being placed in Detroit for shrapnel shell and other supplies for the belligerents. Domestic business among local manufacturers does not show any marked increase, but generally speaking business is on a better basis than was the case a month ago. Machine-tool dealers report little change in the situation; there is a fair demand for single tools, but orders of larger size are very scattered and there is a disposition to allow machinery purchases to go over until 1915. Foundries are for the most part operating at about 60 per cent. capacity. Financial conditions are still unfavorable to building operations.

The Brown-Morris Company, Detroit, has been incorporated with a capital stock of $10,000 by George W. Brown, W. E. Morris and I. J. Brown to manufacture light iron and steel products.

Steeneck & Tegge, Inc., Detroit, has been incorporated with $15,000 capital stock by Charles N. Steeneck, Anton Haber and William Tegge. It is now operating a small plant at 12 Sherman street, for the manufacture of structural and ornamental iron work.

The Kay Salt Company, Detroit, which recently acquired the former plant of the Peninsular Salt Company, is expending about $50,000 in the erection of additional buildings and in modernizing the plant and installing additional equipment.

The Peninsular Machinery Company, Detroit, has been incorporated with $10,000 capital stock to do a general machinery business. The incorporators are Frederick Eberle, Arthur D. McElhose and John A. Flynn.

The Grand Trunk Railroad has offered to rebuild the shops at Port Huron, destroyed by fire last year, provided the city will raise $100,000. It is planned as a beginning to purchase the plant now occupied by the Port Huron Engine & Thresher Company and turn it over to the railroad. It is stated that the matter is now in definite shape and that a large part of the money required has been provided for.

The plant of William A. Reddick, Niles, Mich., manufacturer of small metal specialties, was destroyed by fire November 17, entailing a loss of $40,000. Information as to the rebuilding of the plant is not available.

The Enterprise Brass Works, Muskegon Heights, Mich., which it was previously reported would erect a new factory, has acquired the plant of the defunct Wright, Hood & Cooper Company, and will install its machine finishing and shipping departments therein.

Tekonsha, Mich., has voted a franchise to the Warner Company, Davenport, Iowa, for the construction and operation of an electric light plant.

A. E. Powell, Imlay City, Mich., has acquired a factory site at Lapeer, Mich., and proposes to erect a factory for the manufacture of dredging machines.

Royal Oak, Mich., will extend its water mains and build a new pumping station.

Frederick Seeburger, Riga, Mich., is erecting a one-story factory, 40 x 60 ft., and will install a complete line of woodworking machines for auto body work.

The Covel Mfg. Company, Benton Harbor, Mich., has doubled its foundry by erecting an addition 70 x 150 ft. The equipment is all contracted for.

The Central South

LOUISVILLE, KY., November 23, 1914.

General business conditions are showing a steady improvement, and a better demand for machinery is in evidence. Military operations in Europe are giving business to manufacturers of leather and leather goods, flour, lumber, etc.; and those profiting from these purchases are in a better mood to make replacements. Wood-working machinery, which has been dull for some time, is in better demand. Both sawmills and planing-mills are better prospects than heretofore. Many industrial plants are to be established here shortly, in marked contrast with an almost entire absence of new manufacturing developments the past three months. Altogether, the situation looks much better for machinery manufacturers and dealers.

The Co-operative Motor Car Company, Louisville, will purchase a drill press, lathes and other equipment for its repair shop at 437 South Second street.

The Kentucky Cotton Yarn Company, Louisville, has established temporary offices in the Louisville Trust Building. The contract for its special equipment has been let to the Whitin Machine Company, Whitinsville, Mass. The power machinery, consisting of a 150-hp. and a 40-hp. motor, has not yet been bought. Ira F. Phillips, the general manager, should be addressed.

The Electric Garage Company, Louisville, will erect a two-story building which will be equipped as a repair shop.

The factory formerly occupied by H. Wolke & Co., Louisville, furniture manufacturers, who ceased business over a year ago, is to be put in operation again January 1 by the Wolke Furniture Company, which has been incorporated with $50,000 capital stock.

The Alfred Struck Company, Louisville, is equipping a department for the manufacture of wooden silos. It has heretofore confined its attention to interior finish.

Henry Fruechtenicht, Louisville, is in the market for elevating and grinding machinery for a grain-handling and feed manufacturing plant.

The Southern Rubber Products Company, Louisville, has been incorporated with $25,000 capital stock by A. F. Wolke and others and will establish a plant for the manufacture of inner tubes for automobiles.

The wood-working shop of L. Keller & Sons, contracting carpenters, Louisville, burned recently, with $22,000 loss, will be rebuilt.

The Southern Gas Products Company, Lincoln Building, Louisville, will deal in acetylene welding equipment and supplies, and is in the market for steel-cutting apparatus. H. L. Ogle, the president, should be addressed.

The Kentucky Southwestern Electric Railway, Light & Power Company, Paducah, Ky., is preparing to begin construction work in connection with a traction line from Paducah to Murray, Ky., a distance of 58 miles. It will build a power house, three substations, repair shop, etc. H. C. Rhodes, Paducah, is president.

The Perryville Ice & Electric Company, Perryville, Ky., is reported in the market for two 80 hp. boilers, with stack.

George B. Williams, Winchester, Ky., has a franchise for operating a gas plant at Irvine, Ky., and will begin operations at once. A line will be built from the Cow Creek fields, in Estill County, Ky.

The Harlan Ice Company, Harlan, Ky., has been incorporated with $6000 capital stock by W. C. Moren, J. F. Tyree, London, Ky., and others. A site has been purchased and a plant will be built and equipped at once.

The Stephensburg Stone Company, Stephensburg, Ky., is now ready to purchase equipment for its rock quarry.

The Marion Water & Ice Company, Marion, Ky., has been incorporated with $15,000 capital stock by R. L. Moore, J. T. Pickens and J. T. Hicklin.

The Kentucky Churn Company, Prestonsburg, Ky., is reported to be in the market for wood-working equipment. B. C. Ferguson is in charge.

Covington, Ky., has voted in favor of issuing $200,000 of waterworks bonds. R. T. Horne is the assistant city clerk.

The plant of the Kelsey Wheel Company, Memphis, Tenn., is to be enlarged so as to enable complete automobile wheels.

instead of spokes only, to be manufactured. The cost of the contemplated improvements, including building and equipment, is $100,000. John Kelsey is president.

W. B. Townsend, Johnson City, Tenn., and others, are planning the establishment of a brick plant, to cost $50,000.

The Clinchfield Portland Cement Corporation, of which John A. Miller, Nazareth, Pa., is president, is planning to increase the capacity of its plant at Kingsport, Tenn., 50 per cent.

The H. W. Stroud Awning Company, Knoxville, Tenn., will establish a factory at Jackson avenue and Broadway. Equipment for the manufacture of awnings, tents, wagon covers, etc., will be installed.

Birmingham

BIRMINGHAM, ALA., November 23, 1914.

Appearances indicate a turn for the better in the machinery trade in the South; but actual business transactions are far below normal. Inquiries are much brisker and confidence prevails that conditions will be fit for development projects early in 1915. Even the lumber trade has begun to recover. Small engines and pumps are in fair demand and machine tools for mines and iron-working plants are selling more freely.

A specific announcement of improvements at the plate mill of the Tennessee Coal, Iron & Railroad Company, Birmingham, is expected shortly.

The Decatur Fertilizer Company, Decatur, Ala., has increased its capital stock from $10,000 to $30,000 and contemplates improvements.

The Empire Wheel & Tire Company, Montgomery, Ala., has been incorporated with a capital stock of $2000 by W. S. Webber, F. H. Elmore, Jr., J. W. Gannon, and others.

The Darien Mfg. Company, Darien, Ga., has been incorporated with a capital stock of $40,000 and the privilege to increase it to $100,000. It is proposed to manufacture ice, etc. James F. Thompson, Meyer Bluestein, R. J. Downey, C. M. Tyson, and others, are among the incorporators. An electric power plant is also contemplated.

It is reported that Berry Brothers, Detroit, Mich., plan the establishment of a branch varnish factory at Savannah, Ga.

The Savannah Planing Mill Company, Savannah, Ga., of which G. G. Cambridge and P. G. Judson are the owners, has leased the planing mill property of J. J. McDonough & Co., and will reconstruct it and install machinery at a cost of $15,000.

The Nile-Young Company, Atlanta, Ga., will build a factory.

M. A. Callahan, Schofield Building, Cleveland, Ohio, will establish a plant for the manufacture of drainage tile, brick, etc., at Eustis, Fla.

Manatee, Fla., will construct a water system at a cost of $35,000. Bids are open until December 15. Frank J. Fagan is city engineer.

Lafayette, Ga., has voted to issue $19,700 of sewerage bonds.

H. Ruter, superintendent public works, Gastonia, N. C., will receive bids until December 1 for one 2000-gal. pump, direct-connected to impeller, etc.

Texas

AUSTIN, TEXAS, November 21, 1914.

A more optimistic feeling pervades business and industrial circles than existed a week ago. The financial atmosphere is clearing and an early return to normal conditions is looked for. The machinery and tool trade continues dull, but with brightening prospects for the future.

The Livingston Gin Company, Livingston, will construct a cotton gin. S. J. Andres is interested.

J. Edgar Pew, Beaumont, representing a syndicate of Northern and Eastern capitalists, has purchased 165 acres of land as a site for a large oil refinery. According to Mr. Pew the syndicate will lay an oil pipe line, equipped with pumping stations, between the oil fields of Oklahoma and the refinery. About $15,000,000 will be expended in the project.

The Sam-O-Set Oil Company, Ardmore, Okla., is preparing to construct an oil pipe line from the Healdton and Cushing fields in Oklahoma to Beaumont and Port Arthur, a distance of about 550 miles. Robert Watchcorn is president.

The Columbia Construction Company, Austin, has been organized with a capital stock of $10,000. Peter J. McNemey is one of the principals.

The planing mill of John L. Boyd, Dallas, recently destroyed by fire with a loss of $30,000, will be rebuilt.

The plant being erected for the Texas Anchor Fence, Iron & Wire Works, Fifth and Throckmorton streets, Ft. Worth, Texas, will consist of a one-story building, 100 x 120 ft., to cost about $15,000. J. F. Shelton is president.

St. Louis

ST. LOUIS, MO., November 23, 1914.

A further improved feeling in the machine-tool market is noted, due to the maintenance of the recently improved conditions in general business and to the reports of the increased tendency to go ahead with new enterprises. St. Louis supplies of machine tools have been drawn on for exportation by certain dealers in tools in other cities, who have run short of equipment ready for immediate shipment. The opening of the Federal reserve banks has developed an easier situation in the money market, discount rates are more favorable and generally increased tendency is found to go ahead with business wherever there is opportunity to place products. No real difficulty is encountered in financing reliable operations. Collections are reported good, except in the cotton area, and to be improving there quite satisfactorily.

The St. Louis Yacht & Boat Company, St. Louis, has been incorporated with a capital stock of $60,000 by J. H. Boughton, W. C. Morehead, and others, to manufacture and repair marine engines, boats, etc.

The Columbia Can Company, St. Louis, will erect an addition to its plant.

New Haven, Mo., has voted bonds for an electric light system to cost about $8000. George Mittendorf, Eldorado, Ark., is the engineer in charge.

The Quality Ice & Cold Storage Company, Kansas City, Mo., under the direction of the McCandlish Engineering Company, will install equipment for 3000 tons of refrigeration capacity.

The Junge Baking Company, Joplin, Mo., will equip an addition to its plant at a total cost of about $60,000, including a refrigerating plant.

W. Smith, Macon, Mo., has plans for a garage and repair shop to cost about $5000.

The Rotary Valve Mfg. Company, Kansas City, Mo., has been incorporated with a capital stock of $250,000 by C. R. Jones, J. M. Burgner and L. A. Sherman to manufacture special equipment, valves, etc.

The Forest City Milling & Elevator Company, Forest City, Mo., has been incorporated with a capital stock of $25,000 by A. H. Bailey, G. L. Penney and James P. Morris.

An electric light system will be installed at Marshall, Ark., by Johnson Brothers.

The Van Veneer Company, Malvern, Ark., has been incorporated with a capital stock of $15,000 by H. A. and R. E. Van Dusen and J. G. Green to operate a veneer manufacturing plant.

J. C. Peden, P. O. box 207, Harrison, Ark., is in the market for 35 to 50-kw. generator, a boiler and engine for a light plant.

The Cushing Electric Light & Power Company, Cushing, Okla., has plans for the installation of one 500-kw. generating unit, including generator direct-connected to a Corliss engine, boilers of return tubular type and other apparatus to cost about $30,000.

The Southwest Cities Electric Company, Duncan, Okla., of which John C. Keys is president, will install gas engine power and will receive bids within 60 days therefor.

The Kiefer Light & Fuel Company, Kiefer, Okla., has been incorporated with a capital stock of $15,000 by C. C. Cautrall, Sapulpa; A. G. Williams, Jr., and W. R. Martin, Ft. Smith, Ark., and will equip an electric light plant.

The Locust Grove Light & Power Company, Locust Grove, Okla., has been incorporated with a capital stock of $10,000 by H. O. Long, O. W. Killum, and others, and will install a light and power plant.

Yale, Okla., will expend about $15,000 on the equipment of its electric light plant and its waterworks. H. Askin, engineer, Cushing, Okla., is in charge.

The Spurrier Oil Burning Device Company, Bartlesville, Okla., will equip for the manufacture of 125 oil targets daily. It will also install a plant for the manufacture of boilers at a cost of about $10,000. John R. Spurrier, Box 1178, Bartlesville, is manager.

The Midland Machine Works, Muskogee, Okla., has been incorporated with a capital stock of $15,000 by H. A. von Unwerth, Charles Nelson, Jr., and others, and will equip a machine shop.

The Instantaneous Electric Water Heater Company, Oklahoma City, Okla., recently incorporated, plans to build an addition to its plant early next year. Plans have not yet been formulated.

A company has been organized by A. E. Davenport, Oklahoma City; T. P. Howell, Davis, Okla., and P. P. Campbell, Pittsburg, Kan., to manufacture a patented egg carrier. A plant to have a daily capacity of 25,000 carriers will be established at a cost of $50,000.

W. E. Toler, Pawnee, Okla., is in the market for milling machines and drill presses, and will consider second-hand equipment if in good condition.

The Planters Oil Mill & Mfg. Company, Greenwood, Miss., will replace the plant recently burned at a loss of $125,000. The new equipment will be of equal capacity.

Tupelo, Miss., has plans for the installation of a 250,000-gal. electrically-driven centrifugal pump at its waterworks. W. H. St. John is superintendent.

L. G. Nichols, Shreveport, La., will establish a plant at Cedar Grove for the manufacture of box shooks and other wood products.

The Marksville Electric Light & Ice Company, Marksville, La., of which E. M. Kursheedt is manager, is in the market for 7½-ton ice-making equipment.

The North Louisiana Shingle Company, Monroe, La., is in the market for shingle machinery, shafting, etc., for its plant recently burned. About $10,000 worth of machinery is required.

Alexandria, La., will install pumping machinery, condensing equipment, etc., at a cost of about $12,000. J. C. Raxdale is the engineer. Bids will be received until December 7.

The Ozone Ice Company, Bogalusa, La., will increase the capacity of its ice plant.

The Louisiana Central Lumber Company, Standard, La., will equip a sawmill with two 8-ft. band mills, an 8-ft. vertical re-saw, a 108-ft. edger, an overhead trimmer, a sorting outfit and a complete lath mill outfit.

Natchitoches, La., will install one 15-hp. electrically-driven pump with a capacity of 300 gal. per minute. The mayor should be addressed.

The Pacific Northwest

SEATTLE, WASH., November 17, 1914.

A decided renewal of activity in the lumber market about the first of the year is predicted. Many inquiries have been received from England and the Orient, with the usual number of inquiries from Australia. The only drawback at the present time seems to be the lack of vessels to transport the product. Lumber dealers are expecting an immediate advance in price in all lumber commodities. The flour market is improving steadily, but a similar lack of vessels is a great drawback. A fair demand for irrigation machinery and mining equipment is noted.

The Walla Walla Hot House Vegetable Company, Walla Walla., Wash., is planning to install a gravity steam heating system and an overhead system of irrigation, to cost $40,000, to its greenhouses in that city.

The Boardman Mfg. Company, Portland, Ore., has recently been incorporated by J. S. and J. C. O'Gorman and H. T. Nicolai. It plans the immediate erection of a factory for the manufacture of patented articles.

The Government Standard Powders Company, Anacortes, Wash., has taken an option on a site near Seattle, on which it plans the erection of a powder factory.

The Puget Sound Navigation Company, Seattle, is having plans prepared for the construction of a geared turbine, 24-knot passenger boat.

The Sanitary Pulp Bottle Company, Seattle, has been incorporated with a capital stock of $800,000 by H. C. Ayerst, D. C. Brawnell, J. J. Cross, H. F. McRae and Robert Devers. Brightman, Halverstadt & Tennant, Hoge Building, Seattle, are attorneys for the company. It is announced that it will erect a factory in Seattle.

The St. Maries Lumber Company, St. Maries, Idaho, will build a box factory to cost about $60,000. M. P. Bogie is president.

Warrenton, Ore., has voted a bond issue of $150,000 for a water system.

The Grand Canyon Canal & Power Company, Pocatello, Idaho, has been incorporated with a capital stock of $200,000 by H. J. Craven, S. W. Badcon, C. H. Gosling, and others, to erect and operate hydroelectric power plants, etc.

The Seward Peninsula Power Company, Nome, Alaska, plans improvements and extensions to its present plant. A. J. McConnell is manager.

The Stetson-Post Lumber Company, Seattle, has awarded contract for the construction of a planing mill to cost about $7000.

The Seattle Brewing & Malting Company, Seattle, Wash., will remove its plant to Vancouver, B. C.

The Safety First Air Brake Company, Ltd., Victoria, B. C., has been incorporated with a capital stock of $300,000 to manufacture a patented air brake, etc.

The Alberta & Great Waterways Railway Company, Ltd., is having plans drawn for the construction of an engine shed and machine shop at St. Alberts Trail, Edmonton, Alberta, to cost $10,000. Work will be started at once. J. D. McArthur is the general contractor.

San Francisco

SAN FRANCISCO, CAL., November 17, 1914.

The past fortnight shows a continuance of dull conditions in machine tools and shop supplies, with little improvement in other lines. Some measures passed at the recent election in California tend to create uncertainty; and a "blue sky" law, in particular, is said to have delayed some financial deals on which important machinery orders depended. While there has been a fair crop movement, it appears that money is still very scarce through the country, and collections are poor. Tool orders are for the most part small and widely scattered. There is practically no demand for wood-working machinery. The implement trade is fairly good, with reports of considerable foreign business in tractors, but manufacturers hesitate to increase their facilities until the future is better assured. Orders for mining equipment are numerous, including several of an important nature. A slight acceleration is evident in some lines of miscellaneous equipment.

Hanford, Cal., is taking figures on an air compressor for pumping purposes.

The Valley Ice Company, Fresno, Cal., of which J. R. Erskine is manager, is preparing to increase its plants at Fresno and Bakersfield. A 400-hp. motor and a 100-ton ice tank will be added to each plant.

Carl Leonhardt, Los Angeles, has plans under way for a cement plant to be built near Victorville, Cal.

The Centrifugal Machinery Company, Los Angeles, has been incorporated with a capital stock of $100,000 by W. F. Holt, C. O. Haskell and M. M. Gleason.

The Contractors' Machinery Exchange, San Francisco, has been incorporated with a capital stock of $10,000 by E. A. St. Germain, F. Stebinger and A. R. Chapman.

The American Centrifugal Crusher Company, San Francisco, has been incorporated with a capital stock of $1,000,000 by T. Henshaw, J. Treanor, M. H. Metcalf, C. B. Gould and H. Chickering.

The plant of the Giant Valve & Mfg. Company, Sheldon Building, San Francisco, Cal., manufacturer of pipe fittings, gate valves, plumbers' supplies, etc., under construction at Richmond, Cal., will be completed January 1. Joseph Paulson is secretary.

Western Canada

WINNIPEG, MAN., November 20, 1914.

The industrial situation shows hardly any change; but the outlook is fairly encouraging. Reports indicate that there will soon be a moderate increase in the machinery business. Municipalities continue to make preparations for an expansion of public utilities. At present very few contracts for new manufacturing plants are being made.

Contracts will be let soon for the construction of machine shops, a station, etc., at Prince Rupert, B. C., for the Grand Trunk Pacific Railway Company.

D. H. Sears will erect a shingle mill at Port Alberni, B. C., next spring.

W. E. White will establish a plant at Moose Jaw, Sask., for the manufacture of threshing machines and other agricultural implements.

A quantity of machinery to be installed in the new $90,000 power house for Calgary, Alberta, will be included in the budget of the city council for next year. Storey & Van Egmond, McCallum-Hill Building, Calgary, Alberta, are the architects.

Four buildings will be erected at Calgary, Alberta, for the Western Canada Cordage Company. The main building will be 140 x 160 ft.; the machine shop, 40 x 120 ft.; the fiber warehouse, 80 x 160 ft., and the office building, 30 x 60 ft. Complete machinery for rope and twine manufacturing will be installed. Charles Hay, 202 Odd Fellows Building, Calgary, is the architect.

Fire destroyed the plant of the Goose Lake Roller Mills, Harris, Sask., with a loss of $31,800.

The Rosetown Machine & Auto Company, Ltd., Rosetown, Sask., has been incorporated with a capital stock of $25,000 to manufacture automobiles and motor trucks.

The Saskatchewan Concrete Post Company, Ltd., Regina, Sask., has been incorporated with a capital stock of $25,000. It will erect a plant.

Eastern Canada

TORONTO, ONT., November 21, 1914.

The Oakville Basket & Veneer Company, Ltd., Oakville, Ont., is in the market for a new engine.

Fire did $20,000 damage to the uncompleted plant of the Canadian Kodak Company, Eglington avenue and Weston road, Mount Dennis, Ont.

The Department of Public Works, Ottawa, Ont., is drawing plans for a drydock for Halifax, N. S. The plans provide for a dock 180 x 1150 ft., to cost $3,000,000.

The town clerk, Niagara Falls, Ont., will call for bids for the construction of a waterworks pump house, 15 x 25 ft., to cost about $25,000.

James Gillies, Preston, Ont., who is contemplating the manufacture of sashes, window frames, etc., is in the market for sash-making machinery.

La Campagnie Electrique Provinciale, Ltd., St. Barnabe, Que., has been incorporated with a capital stock of $49,000.

The West Lake Brick & Products Company, Ltd., Wellington, Ont., has been incorporated with a capital stock of $250,000 by N. F. Hoffman and Grover Lauth, Buffalo, N. Y., Hugh A. Rose, and others, to manufacture brick, lime, etc.

The Flexilac Paint Company, Ltd., Toronto, has been incorporated with a capital stock of $50,000, by W. B. Fleming, 874 Manning avenue, Toronto, and others.

The Canadian Link Belt Company, Ltd., Toronto, has been incorporated with a capital stock of $25,000 by W. A. J. Case, Room 1201, C. P. R. Building, Toronto; J. B. Taylor, J. A. Christilaw, and others, to manufacture machinery, drop forgings, structural steel, etc.

The Dominion Ironite Company, Ltd., Waterloo, Ont., has been incorporated with a capital stock of $40,000 by Hiram Snider, H. C. Kinne, Waterloo, Ont., Frank Campbell, and others, to manufacture composition flooring, water-proofing, etc.

The Dominion Foundation Company, Ltd., Montreal, has been incorporated with a capital stock of $50,000 by M. J. Butler and Hugh Doheny, Montreal; Hugh Quinlan, Westmount, Que., M. J. O'Brien, Renfrew, Ont., and others.

Gale Brothers, 518 St. Valier street, Quebec, will rebuild their plant which was recently destroyed by fire with a loss of $25,000. New machinery will be purchased.

It is announced that R. H. McWilliams, Owen Sound, Ont., and John Russell, Toronto, have purchased 40 acres of land and will erect a plant for the manufacture of cement.

G. Cusolito has secured a site at London, Ont., for the erection of a fireworks factory.

The ratepayers, Forest, Ont., passed a by-law to grant $3000 for extensions to the electric light plant.

Grimsby, Ont., is contemplating spending $12,000 for additions to its waterworks plant.

The board of control, Toronto, will purchase a machinery equipment, including engines, generators, motors, etc., for the technical high school, involving an expenditure of about $45,000.

The plant of Williams & Co., 58 Parks street, Niagara Falls, Ont., is to be equipped with machinery for the manufacture of carbureters and equipment for general garage and auto repairs.

Government Purchases

WASHINGTON, D. C., November 23, 1914.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until December 22, schedule 7622, one 100-hp. type A, class 4, 2200-volt induction motor for Mare Island; schedule 7623, 98 special fluted high-speed steel Morse taper shank chucking reamers for Puget Sound; schedule 7633, one motor-driven direct-connected double punch and shear for Philadelphia; schedule 7635, one power forming press, one back geared double crank power press, one spacing punch complete with spacing rack, one circle and slitting shears with traveling carriage and ways, and one power squaring shears, all five motor driven, for Norfolk; until December 29, one duplex feed pump of 7500-lb. of water per hour capacity, for Brooklyn.

The following bids were received by the chief of the Bureau of Yards and Docks, Navy Department, Washington, November 9 for furnishing shipbuilding cranes for delivery at the navy yards at Boston and Philadelphia.

Item 1. Net price for four cranes delivered and erected, complete, at the navy yard, Boston, on foundations furnished by the Government, in accordance with specifications.

Item 2. Net price for five cranes delivered and erected, complete, at the navy yard, Philadelphia, on foundations furnished by the Government, in accordance with specifications.

McMyler Interstate Company., item 1A, $38,600; B, $38,720; C, $38,400; D, $38,520; item 2A, $47,700; B, $47,850; C, $47,450; D, $47,600.

Maine Electric Company, item 1, $51,336; 2, $64,170.

Cleveland Crane & Engineering Company, item 1, $57,260; 2, $71,425.

Terry & Tench Company, item 1, $43,297; 2, $52,530.

Orton & Steinbrenner Company, item 1A, $41,821; AA, $30,836; B, $40,326; BA, $38,011; C, $30,879; CA, $31,119; item 2A, $51,836; AA, $49,281; B, $49,939; BA, $47,045; C, $38,252; CA, $38,569.

American Hoist & Derrick Company, item 1, $38,304; 2, $47,241; item 1, alternate A, $38,104; item 2, $46,991 and $47,491; item 1B, $38,504; item 1C, $41,844; item 2, $51,666; 2D, deduct $100.

Wellman-Seaver-Morgan Company, item 1, $56,500; 2, $70,000.

Whiting Foundry Equipment Company, item 1, $57,185; 2, $70,635.

Niles-Bement-Pond Company, item 1, $79,600; 2, $97,900.

Morgan Engineering Company, item 1, $48,750; 2, $60,750.

Trade Publications

Vertical and Horizontal Engines.—J. H. Snell & Sons, Hamburg, Pa. Pamphlet. Calls attention to a line of vertical and horizontal engines that are made in various sizes, from 3 to 100 hp. Illustrations of the two types of engines are presented, together with condensed specification tables. Mention is made of the boilers that can be supplied for use with the engines, and a complete price list of repair parts is included.

Furnaces and Heaters.—Beach-Russ Company, 220 Broadway, New York City. Pamphlet. Deals with a line of rivet heating, soldering, toolroom and bench furnaces, portable heaters, soft metal burners and pressure blowers. All of these are illustrated and briefly described, and in some cases condensed specification tables are included.

Water Supply Systems.—National Steel Tank & Mfg. Company, Bradford, Ill. Catalogue E. Relates to a pneumatic water supply system for industrial plants where there is no public supply or where it is desired to supplement that system. Views of the different styles of tanks and the various accessories are presented, together with condensed tables of specifications.

Power Plants.—Murray Iron Works Company, Burlington, Iowa. Pamphlet No. 12. Contains a set of reproductions, some 60 in all, of plans of steam power plants that have been supplied complete by this company. The plants shown include installations for all kinds of industries, various kinds of prime movers and a variety of sizes.

Chain Power Transmission.—Diamond Chain & Mfg. Company, Indianapolis, Ind. Folder. Calls attention to the use that was made of one of the company's roller chains to increase the amount of power that was supplied by a water wheel to a lineshaft. A discussion of the various factors involved in the problem is presented, together with a view of the chain drive that was finally installed. Mention is also made of a cotter pin detachable type chain that is now furnished in addition to the standard riveted type.

Belt Conveyors.—Robins Conveying Belt Company, 13 Park Row, New York. A leather card case and memorandum holder, into which is to be inserted each month a copy of the company's "Reminder," containing 24 pages 2¾ x 4½ in. In the November copy are nine pages for memoranda, an illustrated description of the coal handling plant installed by the Robins Company at the works of the Inland Steel Company, Indiana Harbor, Ind., and data on grease cups and idler compound.

Heavy Axle Lathes.—Bridgeford Machine Tool Works, Rochester, N. Y. Collection of loose leaf circulars. Concerned with a line of heavy axle lathes and various other types of heavy duty tools. For the most part a separate circular is given to each machine, with an engraving and brief description on one side and a condensed table of specifications on the other.

Power Presses.—Max Ams Machine Company, Mt. Vernon, N. Y. Catalogue No. 14. Size, 6 x 9 in.; pages, 104. Shows a line of standard types and sizes of power presses and special machinery for working sheet metals. The presses illustrated include inclinable, open back, horn, straight sided, arch, double crank, punching, double action, toggle drawing, screw, reducing and notching presses and illustrations of one or more of each type are presented with a brief general description for the line, followed by a condensed specifica-

tion table. The various special features that are common to a number of the presses, such as pin and automatic jaw clutches and the pitman and slide with screw or eccentric adjustment, are illustrated and briefly described in the front of the catalogue. Mention is also made of dies for working sheet materials, gang slitting machines, and a number of others used in the manufacture of cans.

Metal Working Machinery.—Cochrane-Bly Company, Rochester, N. Y. Collection of bulletins. Relates to a line of metal working machinery that includes a universal shaping machine, metal sawing machines of various types, automatic saw sharpening machines and two styles of filing machines. The descriptions of the several machines are quite complete, and the text is supplemented by a number of halftone and line engravings showing details. Illustrations of the several machines are presented, together with condensed tables of specifications.

Steam Traps and Separators.—Strong, Carlisle & Hammond Company, 1392 West Third street, Cleveland, Ohio. Catalogue No. 18. Lists a line of steam traps and separators, which are designed to reduce steam consumption. Views of the different devices are presented, and the text description is supplemented by a number of drawings showing the construction. Mention is also made of various other appliances, such as vacuum traps, reducing valves, pressure regulators, pump governors, engine stops, etc.

Transformers and Reversing Planing Machine Motor Drive.—Allis-Chalmers Mfg. Company, Milwaukee, Wis. Two bulletins. The first, No. 1088, superseding No. 1077, deals with a line of distributing transformers in which three cooling surfaces are used instead of one and the oil employed for cooling circulates continuously. A description of the general construction and characteristics of the transformer is presented, with numerous illustrations of the various parts, followed by illustrations and brief descriptions of the several types. The second bulletin, No. 1089, describes a reversing motor drive for a planing machine, in which the motor is reversed automatically at the end of the cutting and return strokes. The advantages of this drive are first touched upon, followed by a brief description of the control equipment and its operation. A description of the motor, which is started or stopped by a set of push buttons, is presented, together with a table of dimensions.

Power Hammers.—Beaudry & Co., Inc., 141 Milk street, Boston, Mass. Pamphlet. Describes briefly two types of power hammers, one of which is intended for light and heavy railroad, machine and general forging, while the other is designed for drawing, swaging, spindle making, general manufacturing, etc. Views of the hammers, arranged for either belt or motor drive, are presented together with condensed specification tables and a partial list of users.

Generators and Motors.—General Electric Company, Schenectady, N. Y. Two bulletins. The first, No. 40,500, superseding No. 4796, relates to alternating-current generators designed for direct connection to reciprocating engines. The construction of the generator is gone into at some length, with numerous illustrations of the different parts. Dimension tables and a number of views of installation are included. The second bulletin, No. 41,500, superseding No. 4963, describes small direct and alternating current motors of the drawn shell type, designed for application to small machines, requiring from 1/30 to ¼ hp. for their operation. The construction of the motors is gone into at some length, and is supplemented by a number of dimension tables.

Charcoal Iron Castings.—Lehigh Car, Wheel & Axle Works, Catasauqua, Pa. Catalogue No. 50. Cancels all previous issues, and covers a general line of chilled charcoal iron castings for various uses. Illustrations and dimension tables of the castings, which include sprocket and traction wheels, clutches and clutch levers, spur, bevel and miter gears, tube mill linings and partition plates, are presented. Mention is also made of a line of repair parts that can be supplied for crushing machinery of every description.

Worm and Herringbone Gears.—Fawcus Machine Company, 2828 Smallman street, Pittsburgh, Pa. Two pamphlets. Call attention to a line of worm and cut herringbone gears. In both pamphlets brief mention is made of the various uses to which these gears may be put, and a number of illustrations and tables of sizes that can be furnished are presented.

Down-Draft Furnaces.—John J. O'Brien Boiler Works Company, St. Louis, Mo. Pamphlet. Describes a line of down-draft furnaces for the securing of smokeless combustion, and contains a description of the furnace, together with instructions for its firing and handling. A four page insert shows the amount of space required to install either horizontal tubular or water tube boilers with the down-draft furnace attached. A large number of engravings of the boiler and its different parts are included.

Judicial Decisions

ABSTRACTED BY A. L. H. STREET

SELLER'S LIABILITY FOR DELAYING DELIVERY OF MACHINERY.—When an engine is ordered for installation in a manufacturing plant, and the seller promises to deliver it by a certain time, and is advised at the time of the making of the contract of sale that operation of the plant will be delayed until the engine is received, the buyer is entitled to recover the amount of profits lost through idleness of the plant as a direct consequence of delay in delivering the engine. (Fairbanks, Morse & Co. vs. Carson-Muse Lumber Company, 169 Southwestern Reporter 731.)

SELLER'S WAIVER OF RIGHT TO RECLAIM GOODS.—The fact that goods are sold for cash on delivery does not entitle the seller to reclaim them on the buyer's failure to pay therefor, if the latter has been permitted to retain the goods under such circumstances as raise a presumption that credit was afterward extended, as where efforts are made to collect the price during a period of several months following delivery. (Oklahoma Supreme Court, Lehmann vs. Peoples Furniture Company, 142 Pacific Reporter 986.)

RECOVERY ON OMITTED ITEM OF ACCOUNT.—A creditor for goods sold is not precluded from recovering the amount of an item omitted from a statement which purports to cover all sums due through the fact that the statement has been paid in full as rendered, if the item was innocently omitted. (California District Court of Appeal, Union Lumber Company vs. J. W. Schouten Company, 142 Pacific Reporter 910.)

RIGHTS OF COMPETING MANUFACTURERS ON EXPIRATION OF PATENT.—When the patents on a device have expired and competition results in the manufacture of it, any manufacturer has the right to use any cuts or phrases previously used by the patentee, which are merely descriptive or illustrative of the device; but distinctive or arbitrary words, figures, etc., which serve only to identify articles as being the product of a certain manufacturer must not be imitated. (United States Circuit Court of Appeals, Seventh Circuit, Van Kannel Revolving Door Company vs. American Revolving Door Company, 215 Federal Reporter 582.)

EXAGGERATED CLAIMS IN PATENT SPECIFICATIONS.—A patent is not invalidated by exaggerated statements in the claim as to the capabilities of the invention covered by it, unless the statements were fraudulently made and unless the patentee participated in the fraud. (United States Circuit Court of Appeals, Second Circuit, Universal Tobacco Machinery Company vs. Borgfeldt Stripping Machine Company, 215 Federal Reporter 715.)

PROTECTION OF TRADEMARKS ON EXPIRATION OF PATENT.—The expiration of a patent covering an article of manufacture does not affect the patentee's right to continue to monopolize a trademark previously used, so far as the same is distinctive, and not merely descriptive of the product. (United States Circuit Court of Appeals, Seventh Circuit, Searchlight Gas Company vs. Prest-O-Lite Company, 215 Federal Reporter 692.)

RIGHT OF SELLER TO CANCEL CONTRACT.—When it is not understood in the making of a contract to sell goods that there will be an immediate delivery, the seller is not entitled to rescind the contract merely because immediate shipping instructions are not given by the buyer. (Reid, Murdoch & Co. vs. Somerset Canning Company, 182 Illinois Appellate Court Reports 112.)

STANDARDS OF CARE REQUIRED FOR SAFETY OF EMPLOYEES.—In a suit for injury to an employee while working at a drop hammer, it was improper to permit evidence to be introduced tending to show that other employees did their work in the same way that plaintiff did his, since any negligence on their part would not excuse carelessness in him. But, in such a case, the employer cannot rely upon a violation of a rule promulgated for the safety of employees, if that rule had been customarily so ignored as to be practically abrogated. (Muenter vs. Moline Plow Company, 182 Illinois Appellate Court Reports 578.)

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